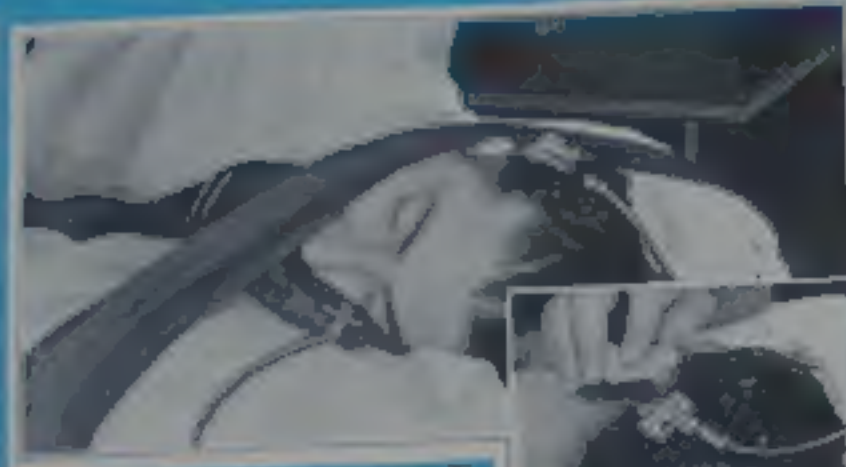
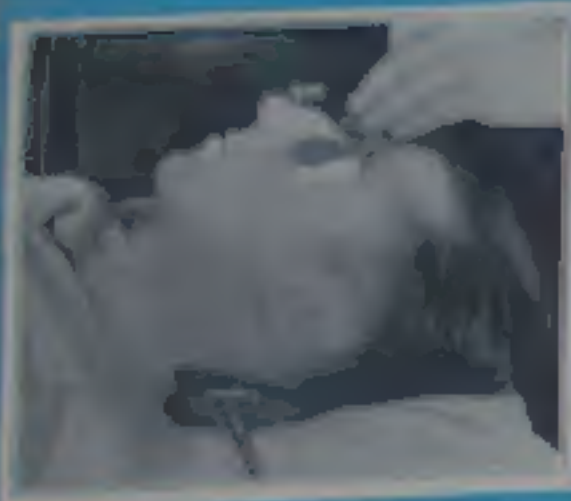
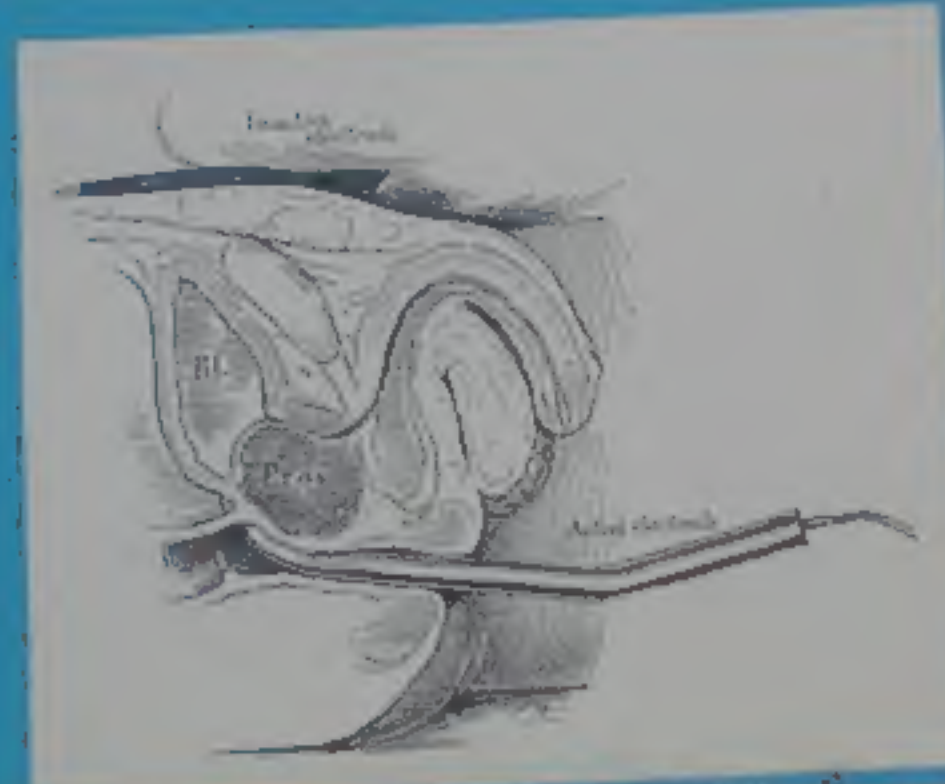


The illustrations in this folder are but a few of those found in the Operative Technic Manual as compiled for users of the Victor Electro-Frequency Diathermy Apparatus. This book is just what its name implies, a manual showing in technical perspective rather than in diagram and prescription. Descriptions of the electrodes to be used in treatment in a given region of the body, how they are applied, and the approximate settings of the various controls of the machine, enable the operator to proceed with assurance that he is employing the correct technique in each case. The result is a standardization that offers a reliable basis for comparing clinical results.



Diathermy to Cervico-Thoracic Method.

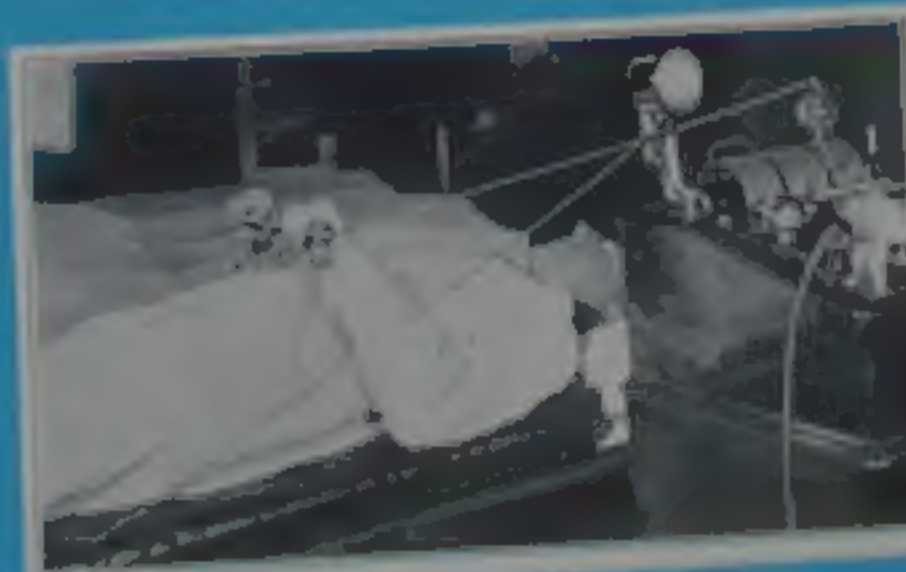


Diathermy to Cervico-Thoracic Method.

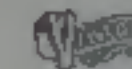
Illustration showing the application of the rectal thermocouple. (From Diathermy in the Treatment of Gynecological Disorders, by Galt and O'Connor, Bruce Pub. Co.)



Diathermy to Cervico-Thoracic Method.



Diathermy to Cervico-Thoracic Method.



VICTOR X-RAY CORPORATION

MAIN OFFICE AND FACTORY
CHICAGO
2012 JACKSON BOULEVARD
STATION D

MANUFACTURERS OF
X-RAY APPARATUS, COOLIDGE TUBES AND
PHYSICAL THERAPY APPARATUS

RESEARCH LABORATORIES
BOSTON, MASS.

CHICAGO

October 15, 1928.

Dear Doctor Earle:

Seven papers on Physical Therapy were read at the last meeting of the A.M.A. in Minneapolis and all of them were well attended. Surely this is indicative of the modern trend of the profession to give proper recognition to this important but hitherto undervalued therapeutic agency.

Take just one of the energies utilized in physical therapy - Surgical Diathermy. You will find enthusiastic reports of its varied uses in most of the accredited medical journals.

You manifested your interest in the subject of Physical Therapy some weeks ago when you gave us the opportunity to send you in abstract form, some reprints from recent medical literature regarding its applications in Surgery.

It is our pleasure to enclose a reprint of a paper by one of your colleagues who has employed Surgical Diathermy extensively in bladder work. It will take only a few minutes to read and we hope you have the time to read it right now.

"Comparable to the dramatic effect of blood transfusion in suitable cases is the effect of diathermy. Why does diathermy play an important role, since it contributes only heat? Only heat! It must be remembered that animals are energy-transformers. One of the greatest, perhaps the greatest control of energy transformation is heat, for it is known that with each increase of 1 degree C. in temperature, the speed of chemical activity is changed 10 per cent. What wonder, what drug has a metabolic effect in the body comparable to that? Even laying aside the obvious facts of physics, the manner in which the patient responds to the application of heat is most striking. In diathermy we have an ideal method for introducing heat into the body. As an emergency measure in the case of a patient whose energies are flagging, diathermy almost equals blood transfusion as a means for temporary relief. Later we shall discuss diathermy as an important warming measure during certain abdominal operations."

G. W. Cole, M. D., and C. C. Higgins, M. D., Cleveland, "The Indication and Treatment of Post-operative Complications in Abdominal Surgery," *Journal Am. Med. Assn.*, November 15, 1927, Page 1118.

Through our extensive reference library we are in position to supply abstracts and reprints covering other conditions found in your practice which have been successfully treated with physical therapy apparatus. There may be had for the asking.

Very truly yours,

VICTOR X-RAY CORPORATION

REPRINTED FROM THE

A SPECIAL DELIVERY

STANDARDIZED TECHNIC CHART for VICTOR VARIO-FREQUENCY DIATHERMY APPARATUS

HEAD GROUP								
Region	Method	Electrodes	Freq.	Volt	Int.	Time	M. A.	Manual Page
Frontal Sinus	Double Plate	BB AA	5	B	1			7
Ears	Double Plate	K A	5	B	1			8
Ears	Binaural	Binaural	6	A	1			9
Eye	Double Plate	P AA	5	B	1			10
UPPER EXTREMITY GROUP								
Finger	Double Cuff	I I	6	C	4			11
Finger	Thimble and Cuff	Thimble I or N	3	C				12
Finger	Plate and Cuff	C or K N	5	B	2-3			13
Wrist	Plate and Cuff	EE N	5	D	4			14
Wrist	Double Plate	P P	4	B	1			15
Elbow	Double Plate	G G	4	B	2-3			16
Elbow	Double Cuff	N N	3	C	4			17
Shoulder, AP	Double Plate	S J	4	B	3			18
Shoulder, Med. L	Double Plate	D V	3	A	4			19
TORSO GROUP								
Chest, left	Double Plate	Q and E, C or T	3	C	4			20
Chest, right	Double Plate	Q and E, C or T	2	B	4			20
Spine	Double Plate	Q O	3	C	4			21
Liver or Kidney	Double Plate	Q D	3	C	4			22
Sacro-Iliac	Double Plate	L EE	3	B	4			23
Penis	Double Plate	R FF	3	C	4			24
Male Urethra	Corbus and Plate	Corbus EE	3	C	4			25
Scrotum	Scrotal	Scrotal	4	C	4			26
Prostate	Prostatic and Plate	Pros. EE	3	C	4			27
Female Urethra	Corb., Belt, Plate	Corb. & FF or F	4	A	3			28
Cervix	Corb., Belt, Plate	Corb., C and C	4	A	3-4			29
Cervix	Chapman, Belt	Chapman F	3	C	4			30
LOWER EXTREMITY GROUP								
Hip	Double Plate	B C	3	B	4			31
Knee	Double Plate	K K	4	C	4			32
Knee	Double Cuff	N M	3	B	4			33
Ankle	Plate and Cuff	M EE	3	A	4			34
Heel	Plate and Cuff	M EE	3	B	4			35
Toes	Plate and Cuff	N EE	3	B	4			36
MISCELLANEOUS SETTINGS								
Method	Disp. Elec.	Act. Elec.	Freq.	Volt	Int.	Time	M. A.	Page
Bifurcated Cord		EE, (2), FF (2)	3	C	4			37
Autocon.	3" Auto. Couch	Lge. Hdle.	3		4		400-600	38
Autocon.	3" Auto. Couch	Abdom. Plate and Handle	3		4		600-1000	39
Autocon.	Thin Auto. Couch	Abdom. Plate and Handle	5	D	4		1000 up	40
Coagulation	Q	Surgical Set	3	C	4			41
Desiccation		Pulguration Set	3		4			42
Vac. and Non Vac.		As desired	3		4			43



Manual of
**Standardized Operative
Technic**

For Users of the
Victor Vario-Frequency
Diathermy Apparatus



Compiled by
Educational Department
Physical Therapy Section
VICTOR X-RAY CORPORATION

A GENERAL ELECTRIC



ORGANIZATION

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VICTOR X-RAY CORPORATION

Foreword

AS manufacturers of physical therapeutic apparatus the Victor X-Ray Corporation assumes certain obligations to every user, in line with the same well known policy as it has applied to users of Victor X-Ray apparatus for over a third of a century.

It is not sufficient that our sales and publicity efforts be directed to creating interest and effecting sales for physical therapeutic apparatus, leaving the physician who buys it to work out the problem of applying this equipment, as best he can, from literature that abounds, as the divergence of opinions and methods in operative technic often proves confusing to the physician with little or no experience with these therapeutic agents. From the standpoint of a long established Victor policy, the sale of any diagnostic or therapeutic device can not be considered brought to a successful conclusion until the physician or institution is actually using it to the best advantage and with utmost satisfaction. Victor Service is a means to this end. It is anything but a mere sales slogan—it is actual, something tangible, and thousands of Victor users attest to its value as equal in importance to the high quality of the apparatus itself.

The Victor Educational Department is one phase of Victor Service. Its function is, first the observation and study of methods in operative technic as used by specialists in their respective fields; second, the interpretation of these findings in such form that a more or less standardized technic may be followed safely by the user of Victor equipment. Diagnosis, prognosis and pre-

scribing are outside the realm of this Department. Therefore the object of this *Manual of Operative Technic* is to familiarize the user of Victor apparatus with the mechanical procedures involved, such as the types of electrodes used for various treatments, and their positions on the body for treatment of a given condition, the methods suggested being based on observations of operative procedures used by accepted authorities in physical therapeutics, in their respective specialties.

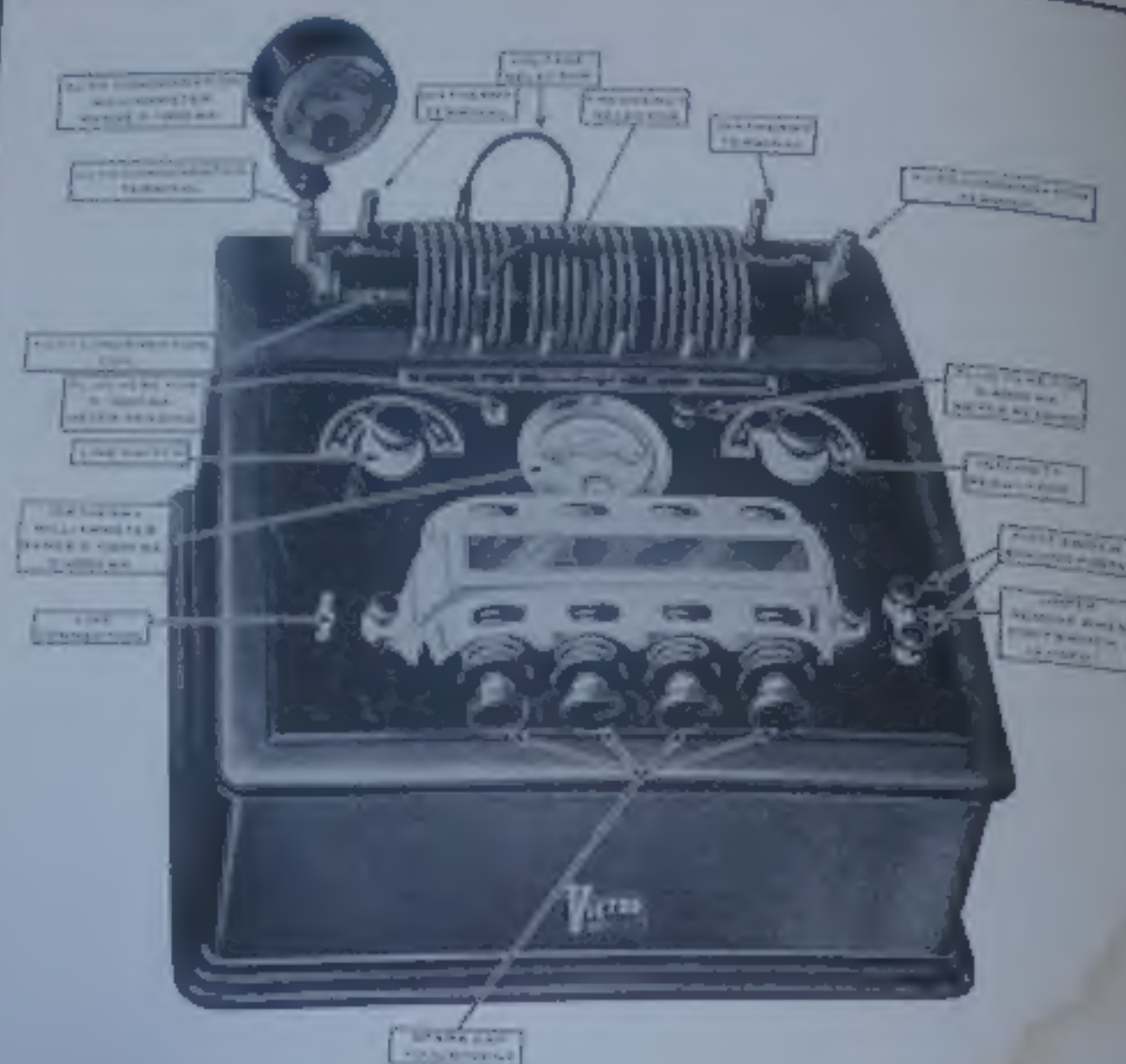
It may also be of interest to add that the Victor X-Ray Corporation at its headquarters in Chicago, in view of its large number of factory and office employees, maintains a medical clinic for these employees similar to those found in many other large industries in the United States. Obviously, Victor physical therapy equipment is available to the Medical staff of this clinic, and the technics described in this Manual have also proved practical in the work of the clinic. It follows that our Educational Department may work out to advantage the simplest operative technic, thru observing the various methods actually applied in this clinic.

With a large field organization of selected men located in our Direct Branches in the principal cities, all with the technical training given by our Engineering Service and Educational Departments at Chicago headquarters and from which they are constantly obtaining information, there is ample assurance that the physician using Victor physical therapeutic apparatus will receive intelligent cooperation and that he will be kept abreast of the developments and latest approved methods in operative technic.

Thus Victor Service aims to fulfill its assumed obligation to every physician who places his confidence in Victor equipment and the organization that sponsors it.

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Shoulder	18 and 19
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Chest	20
Spine	21
Liver or Kidney	22
Sacro-Iliac	23
Penis	24
Male Urethra	25
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EXPLANATORY

Machine settings for voltage and frequency given in this Manual will guide users of the Victor Vario-Frequency Diathermy Apparatus. With this machine the voltage and frequency may be varied independently, thus offering a wide range of selectivity for determining the settings with which the maximum current (milliamperage) through a given part is obtained. The settings as given are for the average patient and may be varied to suit the individual case.

Dosage (milliamperage) is obviously determined by the physician and as the condition under treatment may indicate; it is also governed to some extent by the tolerance of the patient.

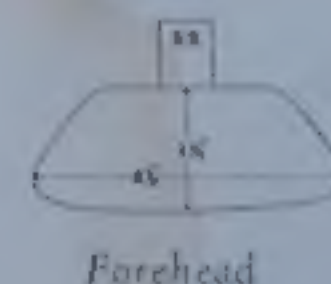
Electrodes indicated by diagram have the dimensions given, so that they may be cut out of electrode foil, which comes in three thicknesses, viz. .005" thick (Cat. No. J6181), .020" thick (Cat. No. J6036) and .036" thick (Cat. No. J6037). When these electrodes are applied they should be molded to conform perfectly to the surface of the part. The patient should be completely relaxed. Skin must be clean and warm. Do not use soap lather. Hip and shoulder electrodes may be held in place by sandbags. Bind others, where indicated, in position with rubber bandage, but not too tightly. Insure contact throughout area of electrode.

Victor Bulletin No. 266 describes and illustrates a complete line of diathermy accessories, such as electrodes, cords, clips, binding straps, timers, etc. A copy will be sent on request.

FRONTAL SINUS Double Plate Method



Electrodes Used



Forehead



Neck

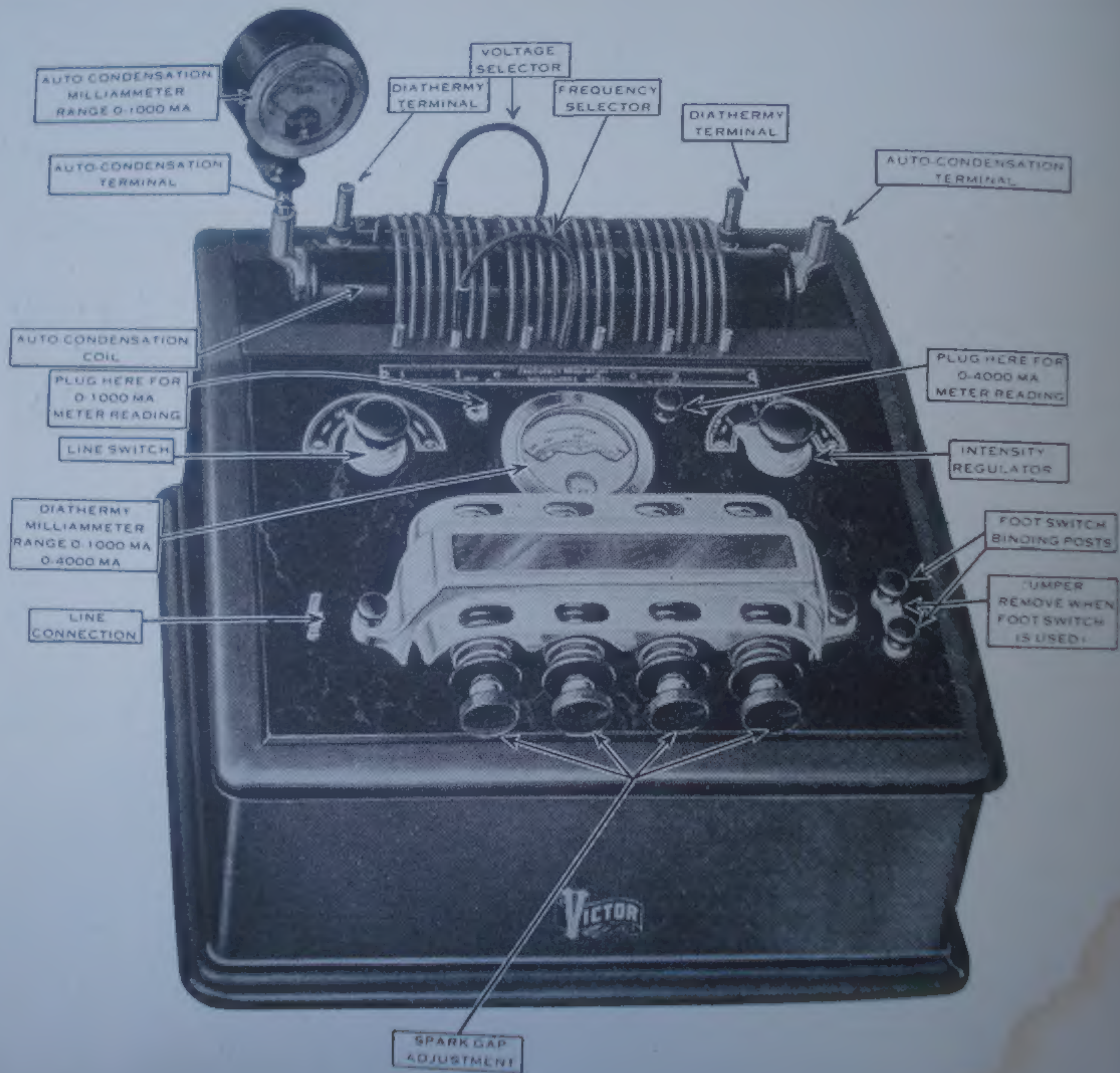
Machine Settings

Frequency setting at "5".

Voltage setting at "B".

Intensity setting at "1" (to start).

NOTES:

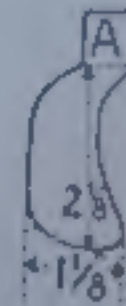
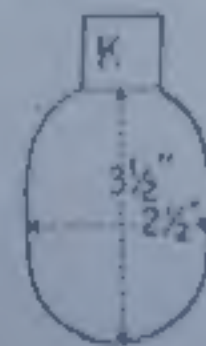


EXPLANATORY

EARS
Double Plate Method



Electrodes Used



Machine Settings

Frequency setting at "5".

Voltage setting at "B".

Intensity setting at "1" (to start).

NOTES:

EARS
Binaural Method



Electrodes Used



Binaural Diathermy Electrode (No. 36184)

Machine Settings

Frequency setting at "6".

Voltage setting at "A".

Intensity setting at "1" (to start).

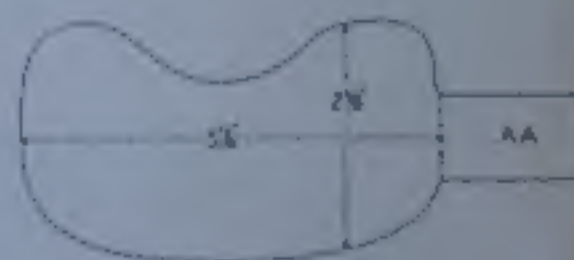
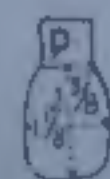
Caution: Never exceed 50 to 150 M.A.

EYE Double Plate Method



Cellucotton saturated in sodium bicarbonate under active electrode; a light sandbag holds active electrode in place.

Electrodes Used



Machine Settings

Frequency setting at "5".

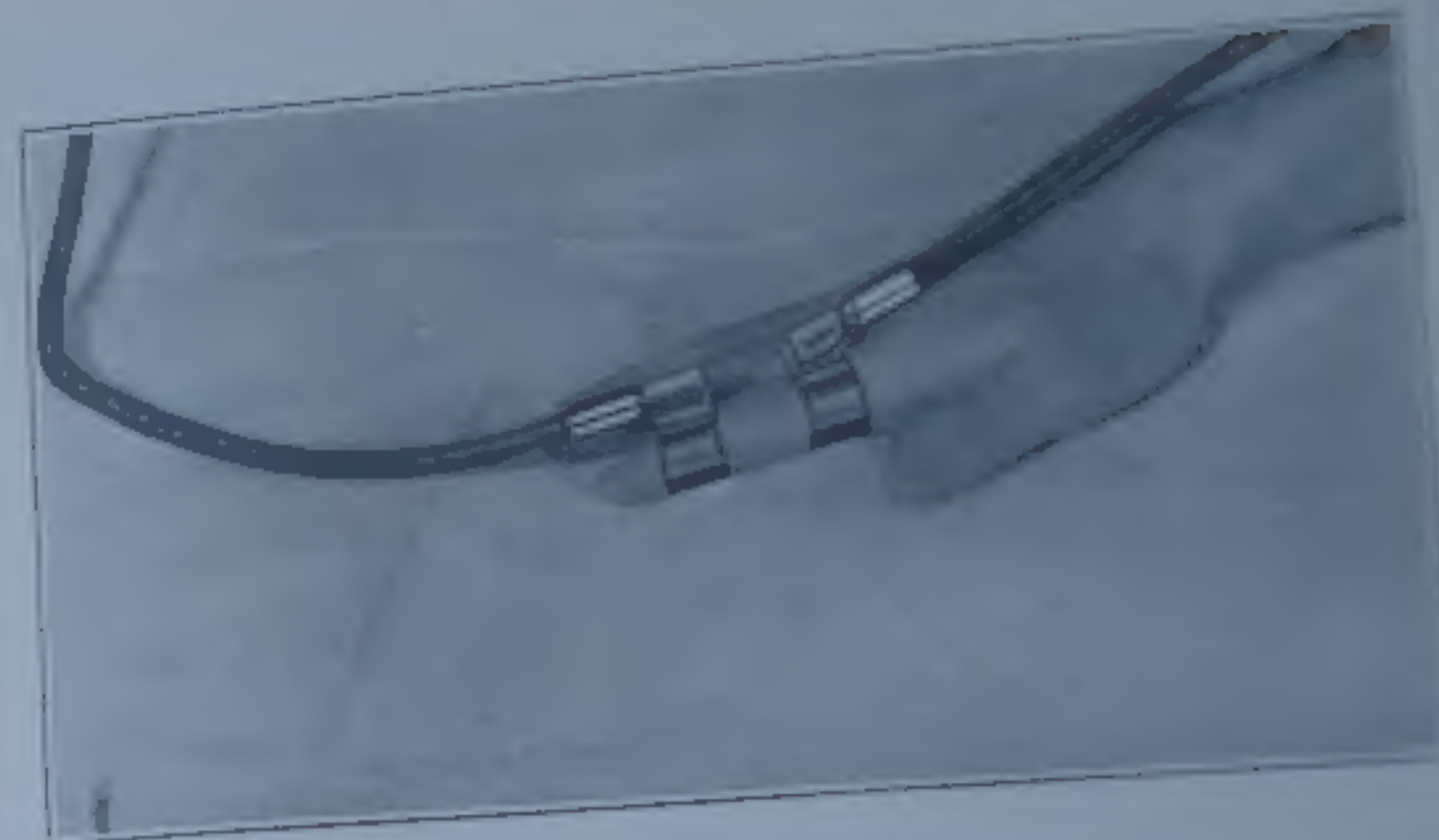
Voltage setting at "B".

Intensity setting at "1" (to start).

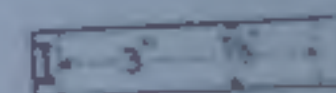
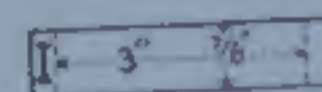
Caution: Never exceed 50 to 150 M.A.

NOTES:

FINGER Double Cuff Method



Electrodes Used



Machine Settings

Frequency setting at "6".

Voltage setting at "C".

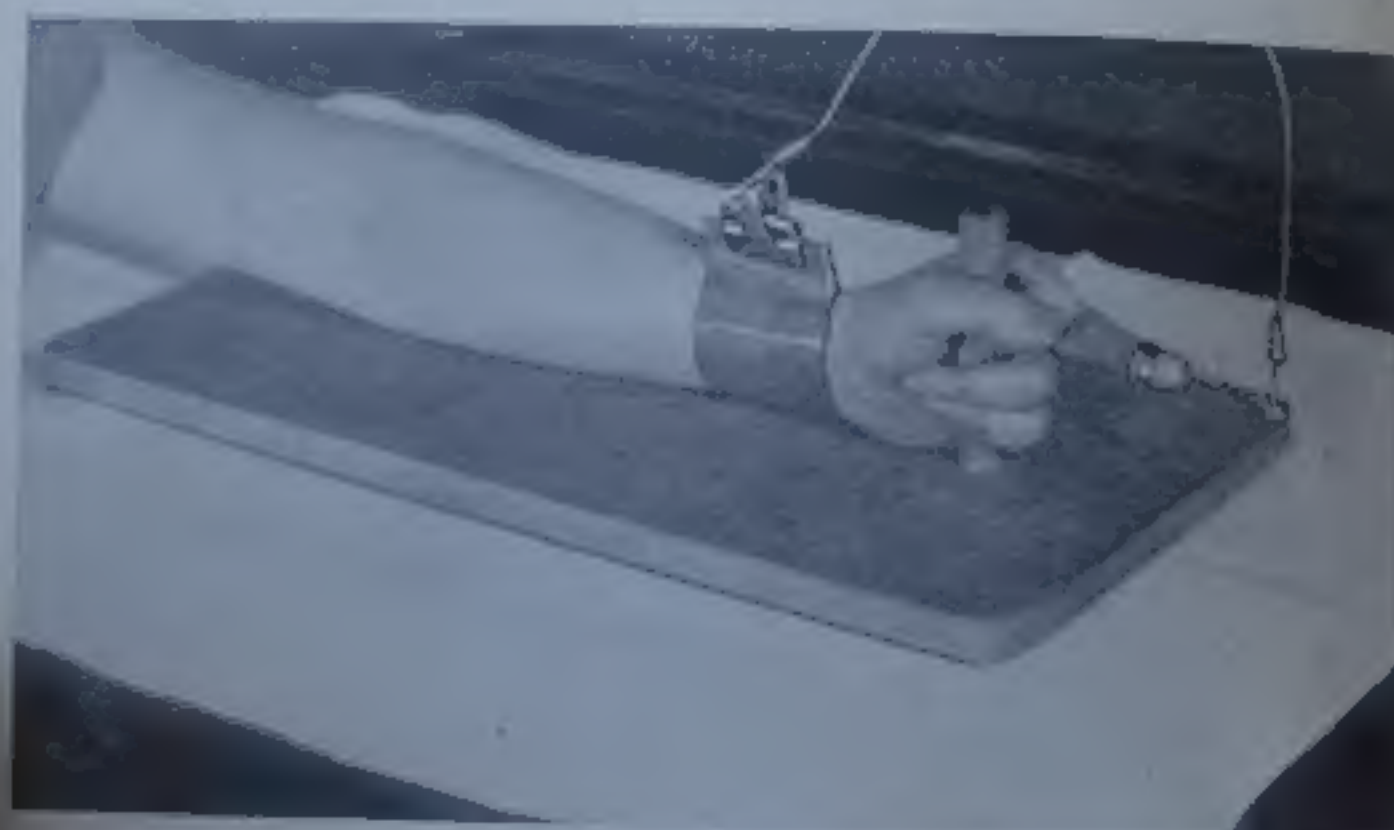
Intensity setting at "4".

NOTES:

FINGER Thimble and Cuff Method



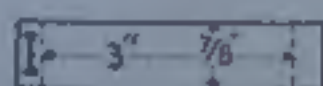
Showing application of diathermy to finger—double finger cuff method.



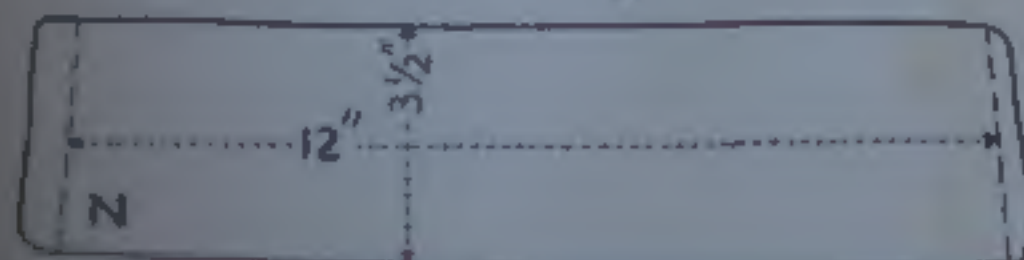
Showing application of diathermy to finger—wrist cuff and finger cuff method.

Electrodes Used

Ordinary
Thimble
and



or



Machine Settings

Frequency setting at "3".

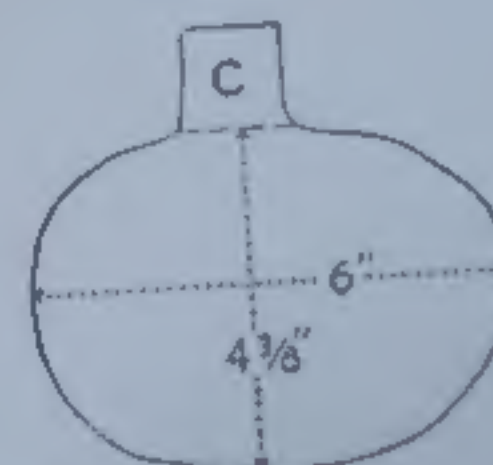
Voltage setting at "C".

Intensity setting at "1" (to start).

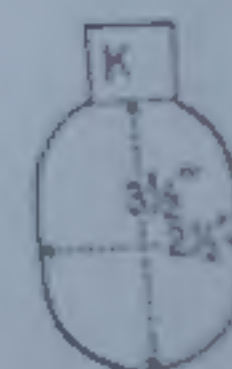
ONE OR MORE FINGERS Plate and Cuff Method



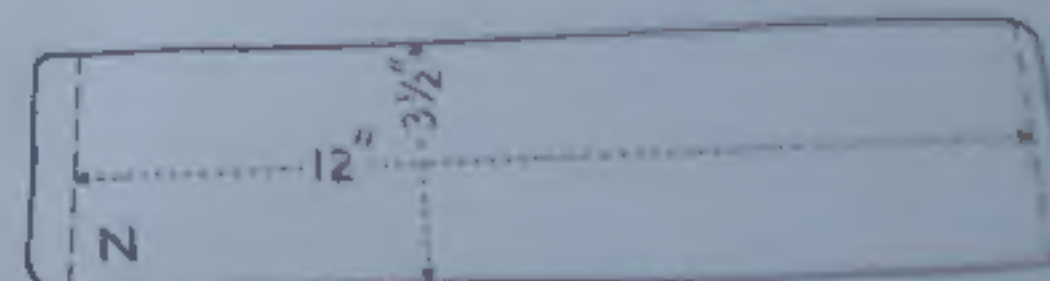
Electrodes Used



or



and



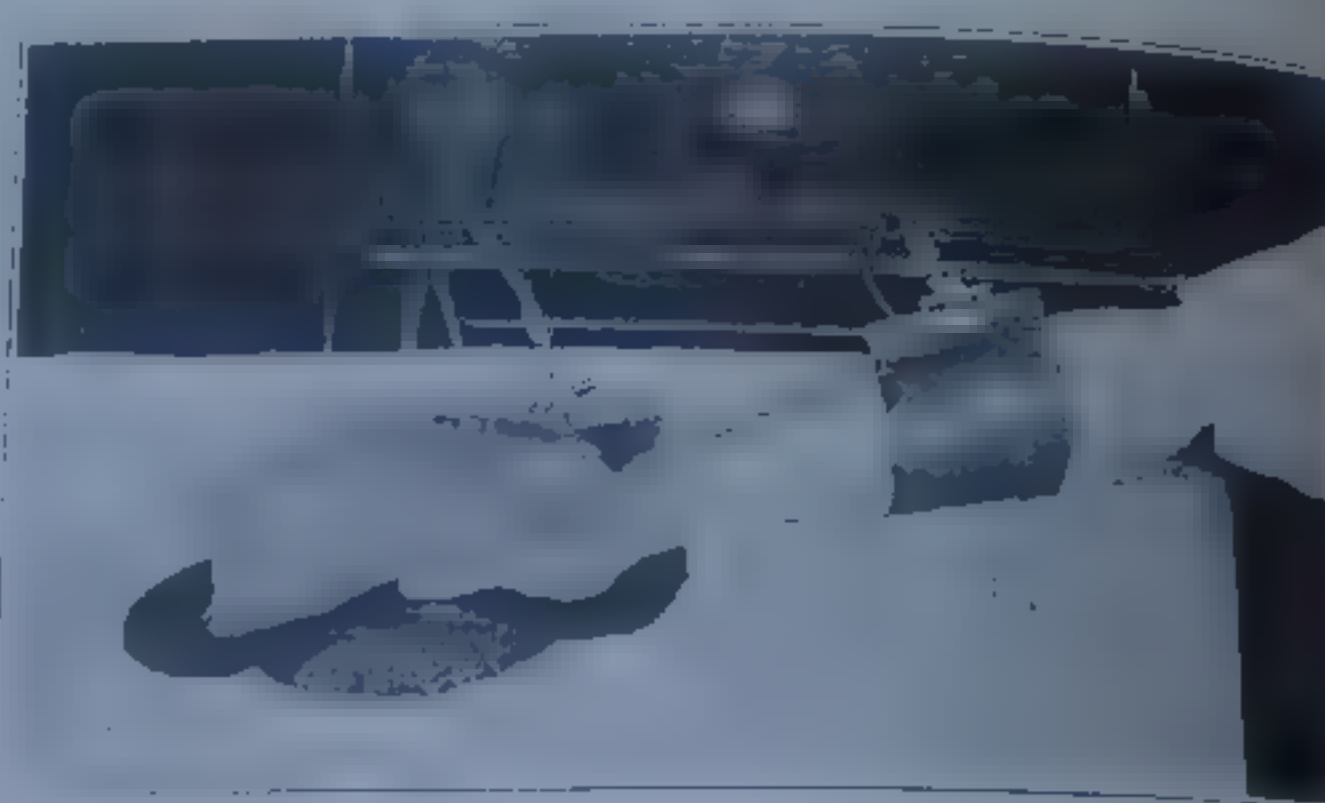
Machine Settings

Frequency setting at "5".

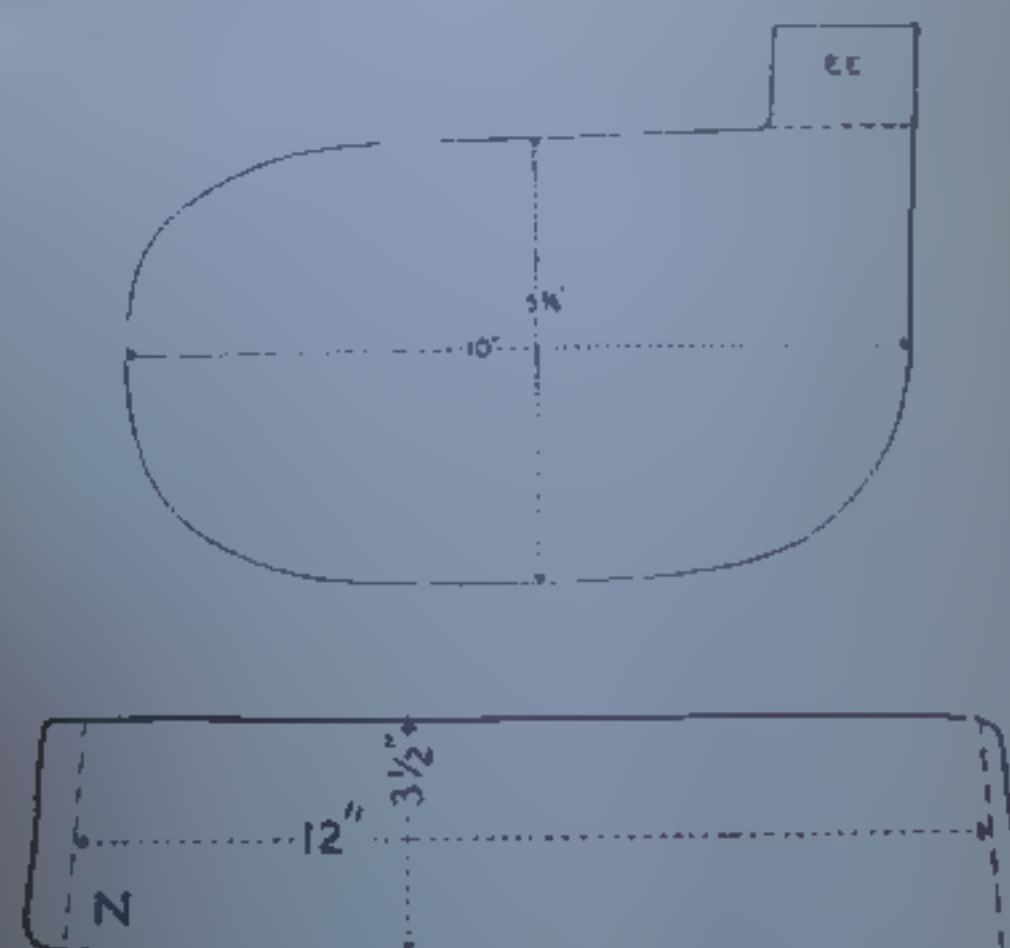
Voltage setting at "B".

Intensity setting at "2" or "3".

[[WRIST Plate and Cuff Method]]



Electrodes Used



Machine Settings

Frequency setting at "5".
Voltage setting at "10".
Intensity setting at "4".

[[WRIST Double Plate Method]]



Electrodes Used

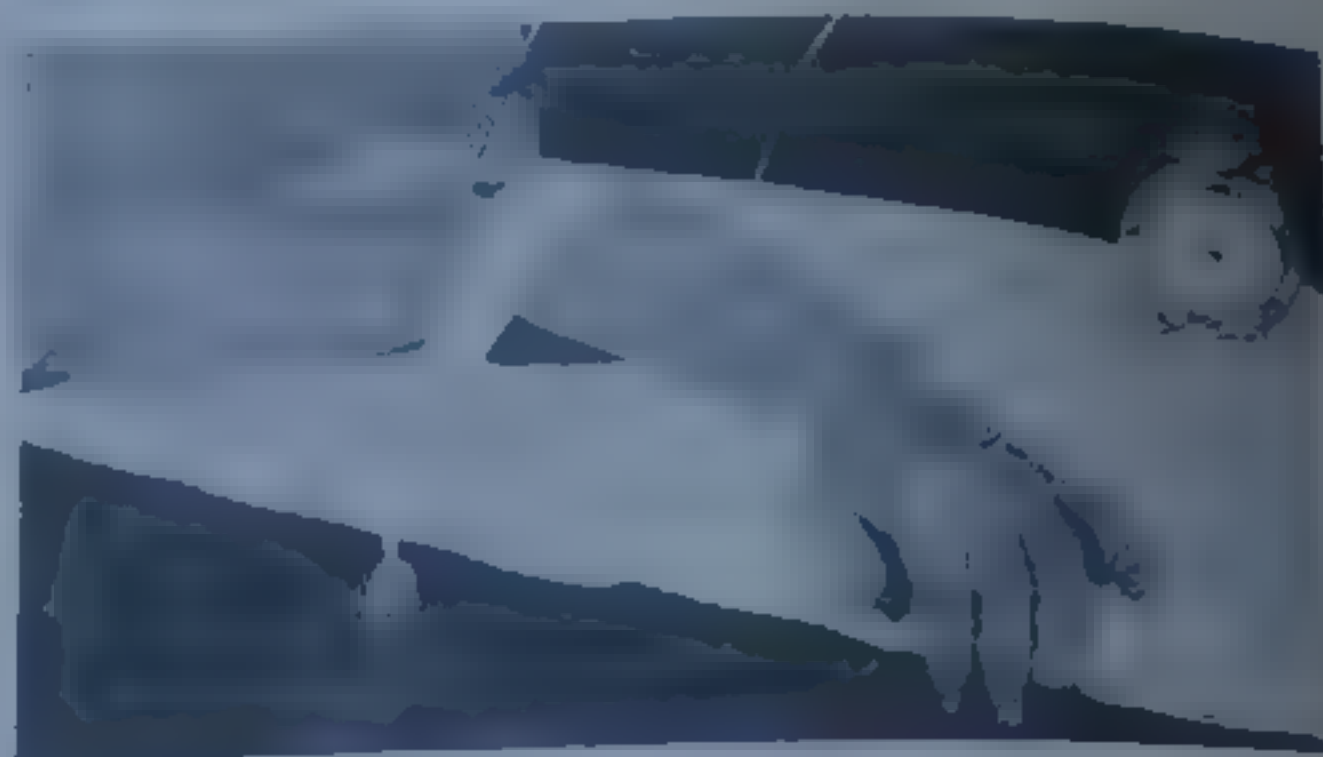


Machine Settings

Frequency setting at "4".
Voltage setting at "B".
Intensity setting at "1" (to start)

NOTES:

ELBOW Double Plate Method



Electrodes Used



Machine Settings

Frequency setting at "4".
Voltage setting at "B".
Intensity setting at "2" or "3".

NOTES:.....

.....

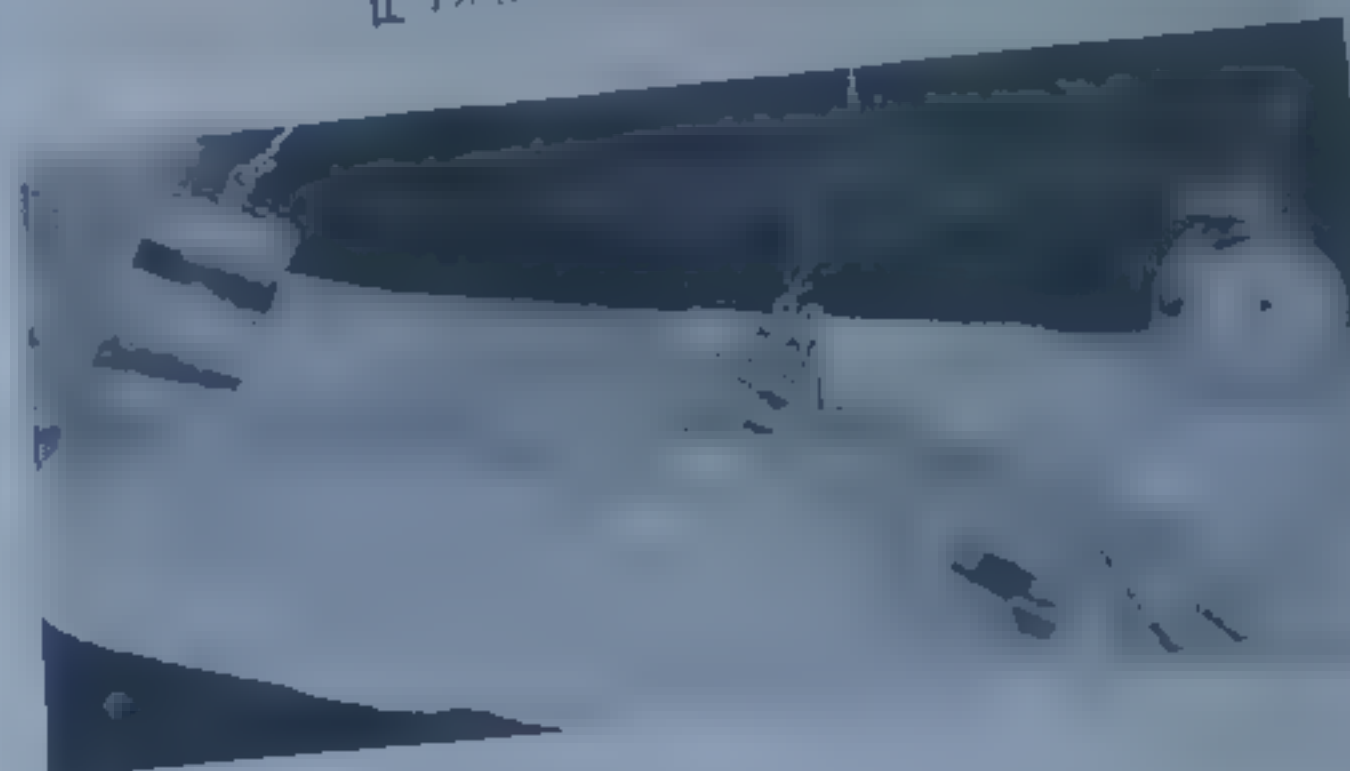
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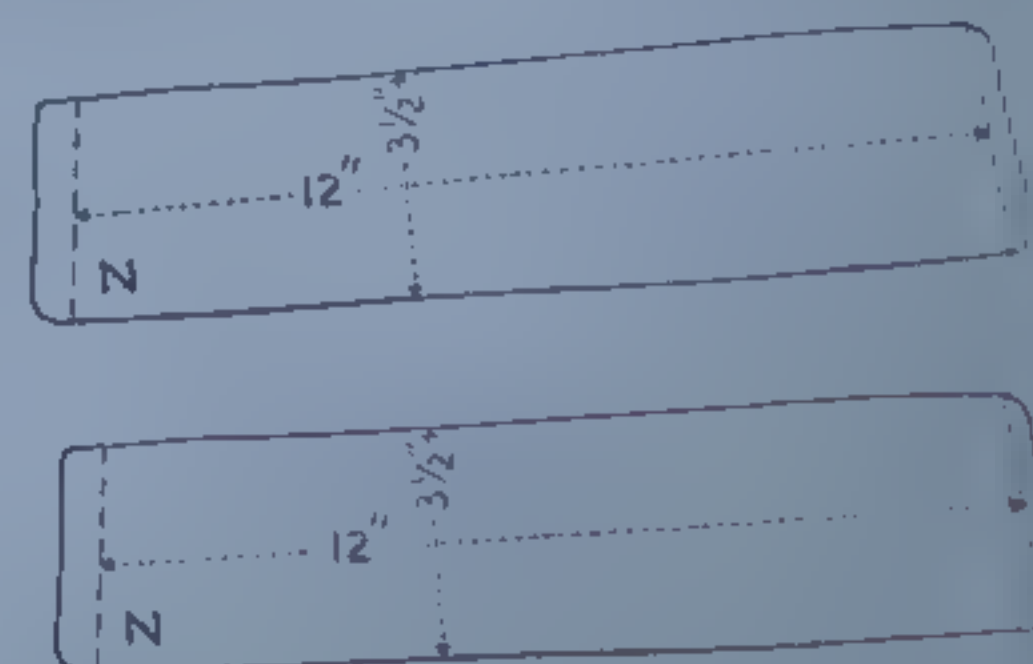
.....

.....

ELBOW Double Cuff Method



Electrodes Used

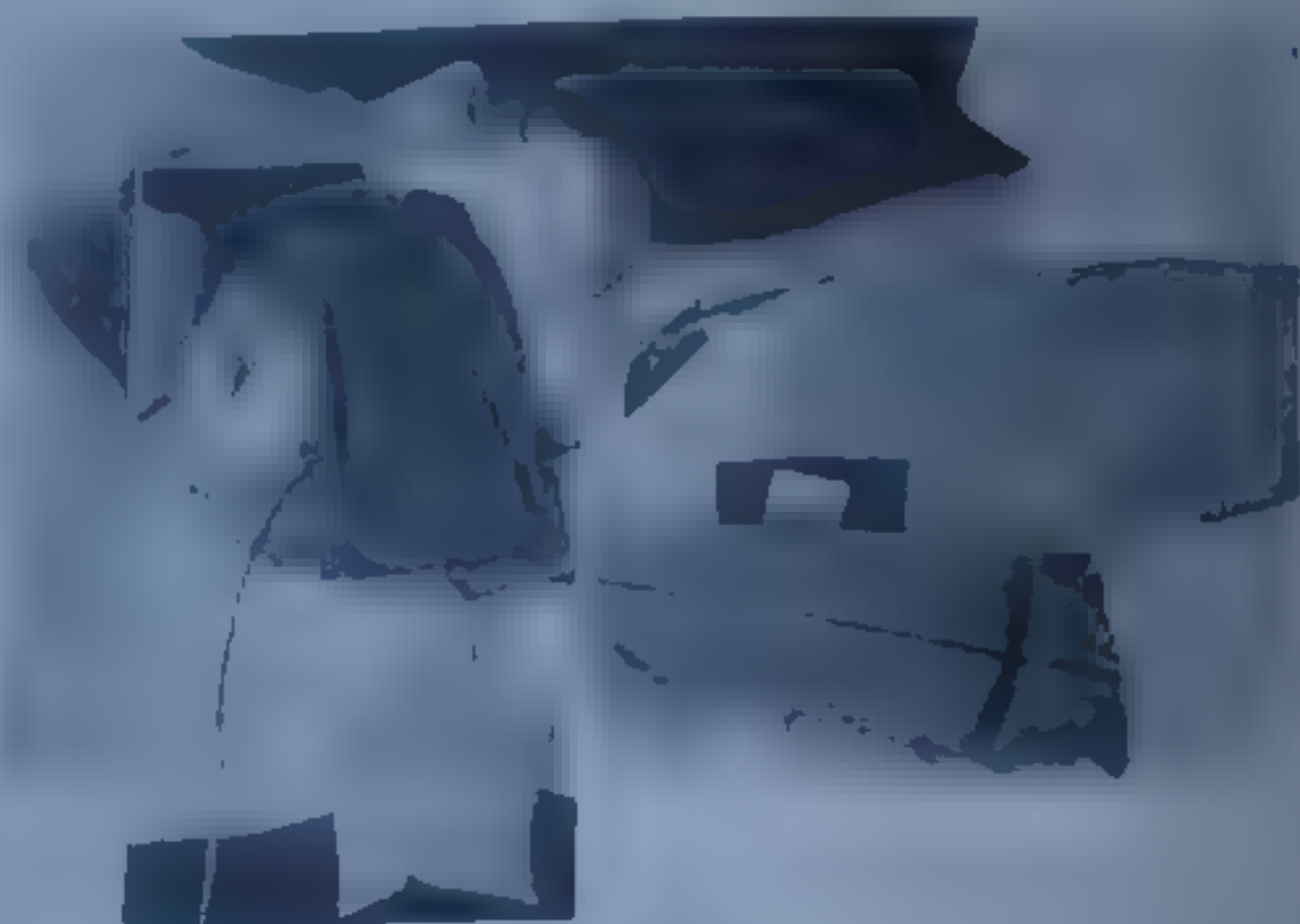


Machine Settings

Frequency setting at "3".
Voltage setting at "C".
Intensity setting at "4".

NOTES:

SHOULDER Double Plate Method (Anterior-Posterior)



Shows positions of electrodes for application of diathermy to shoulder, anterior-posterior method. Note inflated rubber compression bladder under shoulder to insure even contact of foil electrode on skin surface. Inset shows connections completed and with sand bag set to insure even contact of other foil electrode.

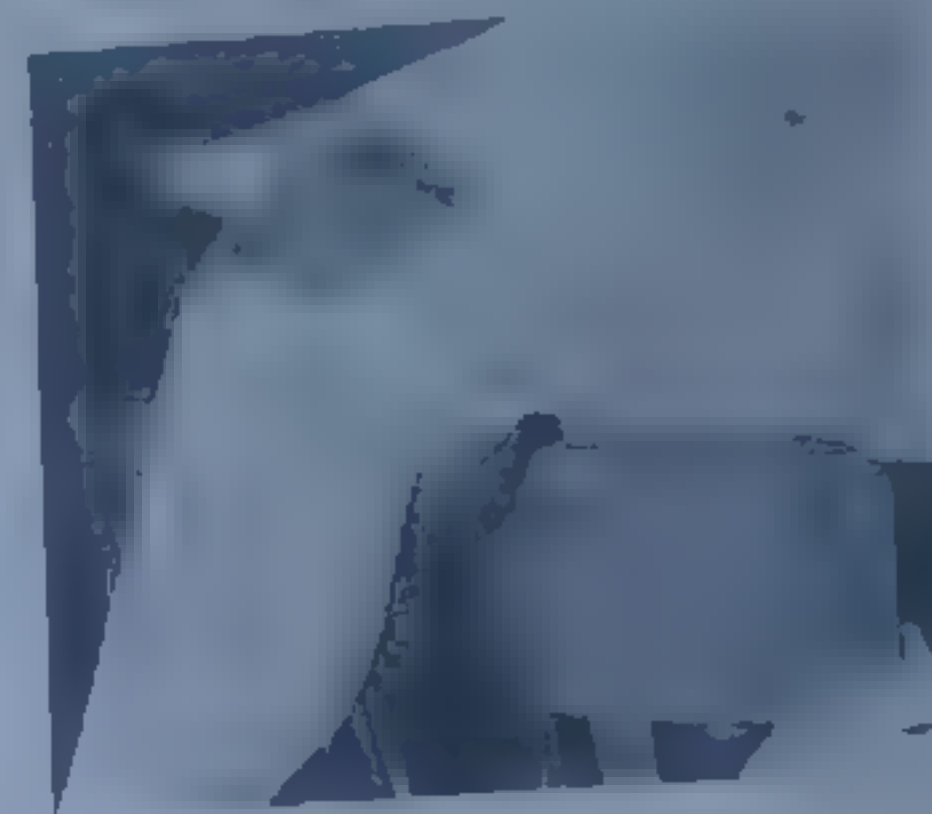
Electrodes Used



Machine Settings

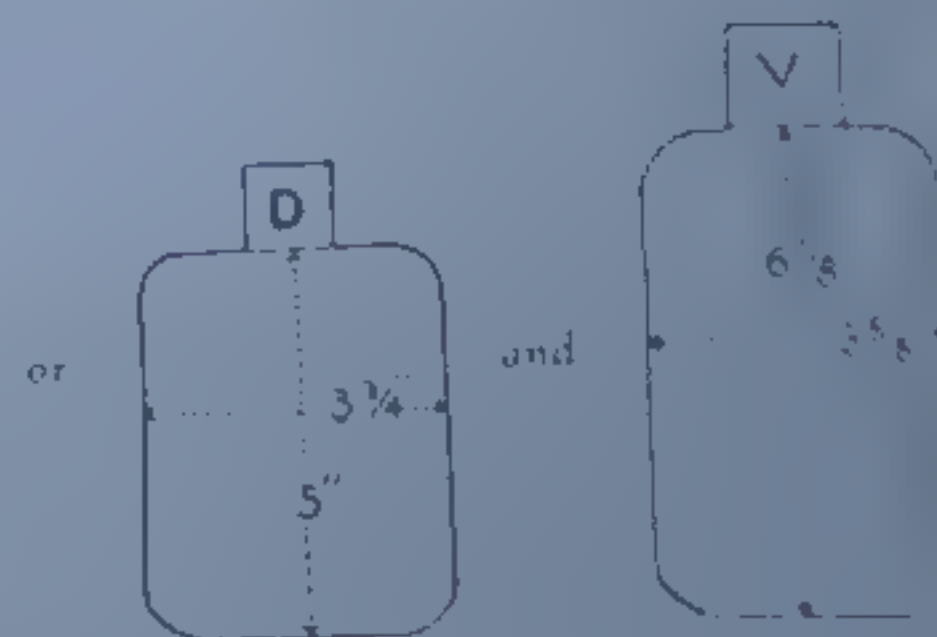
Frequency setting at "4".
Voltage setting at "B".
Intensity setting at "3".

SHOULDER Mesh and Plate or Double Plate (Metal Lateral)



Electrodes Used

Flexible Metal Fabric Electrode (No. J6019), Cut 4"x4".



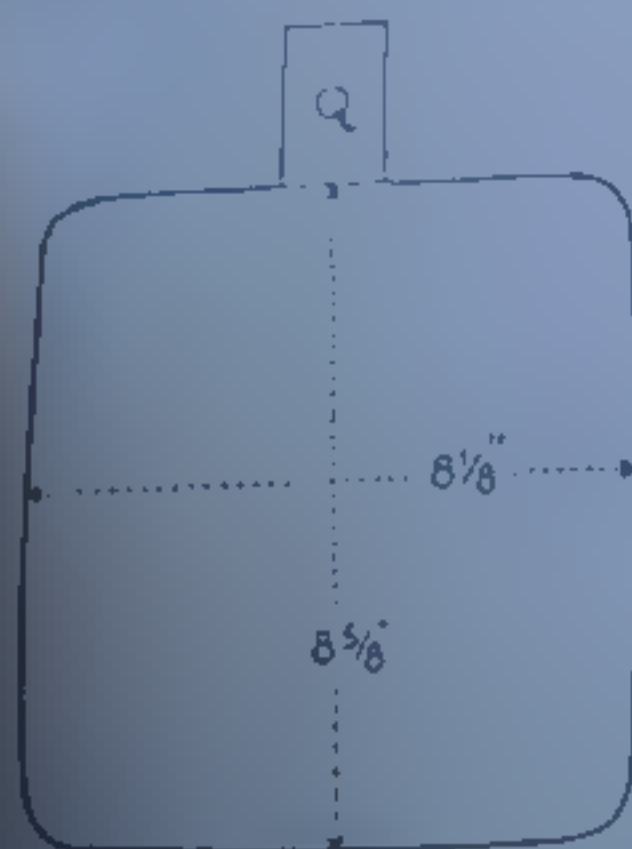
Machine Settings

Frequency setting at "3".
Voltage setting at "A".
Intensity setting at "4".

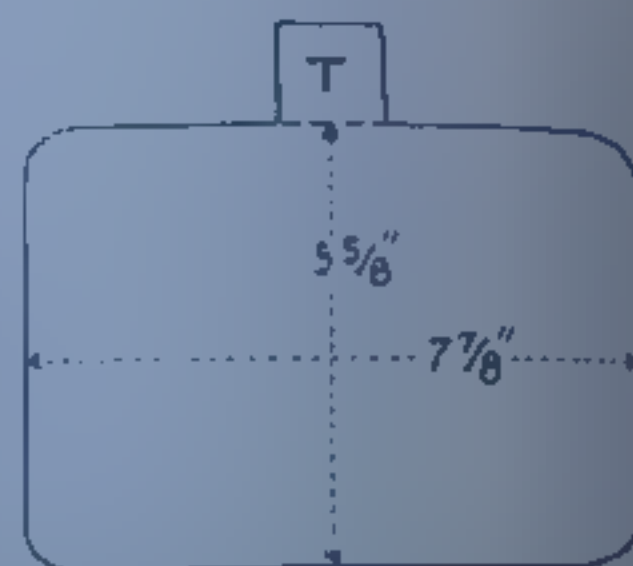
CHEST *Double Plate Method*



Electrodes Used



Dispersive



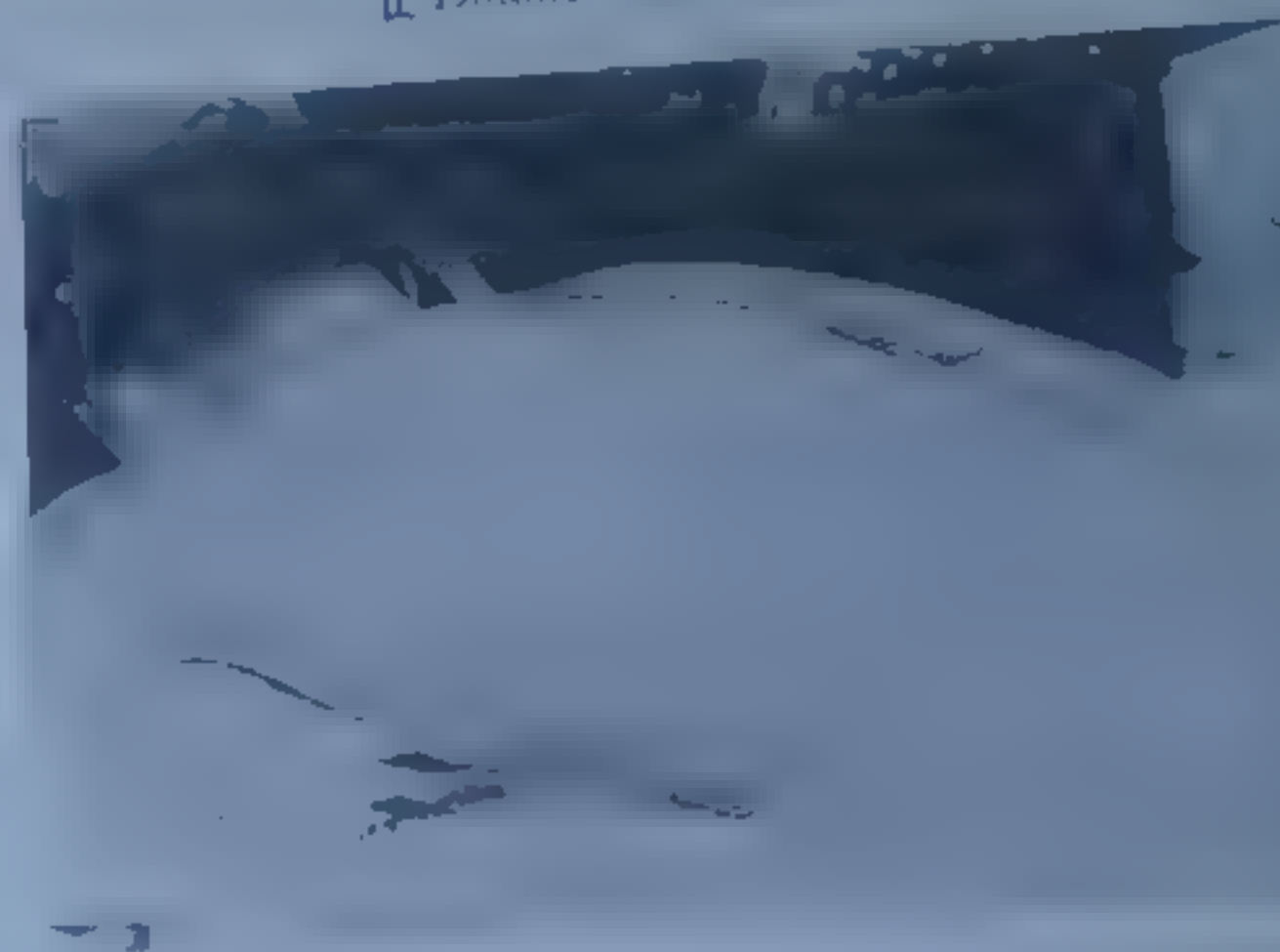
Active

Note: Electrodes C or E may also be used for the active electrode.

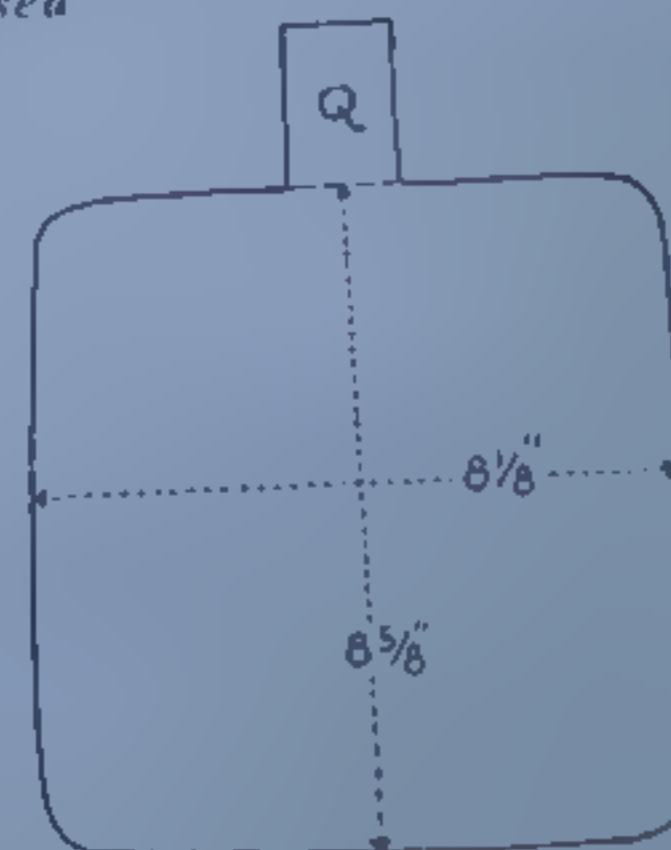
Machine Settings

	Left chest	Right chest
Frequency setting at	"5"	"2"
Voltage setting at	"C"	"B"
Intensity setting at	"4"	"4"

SPINE *Double Plate Method*



Electrodes Used



Dispersive

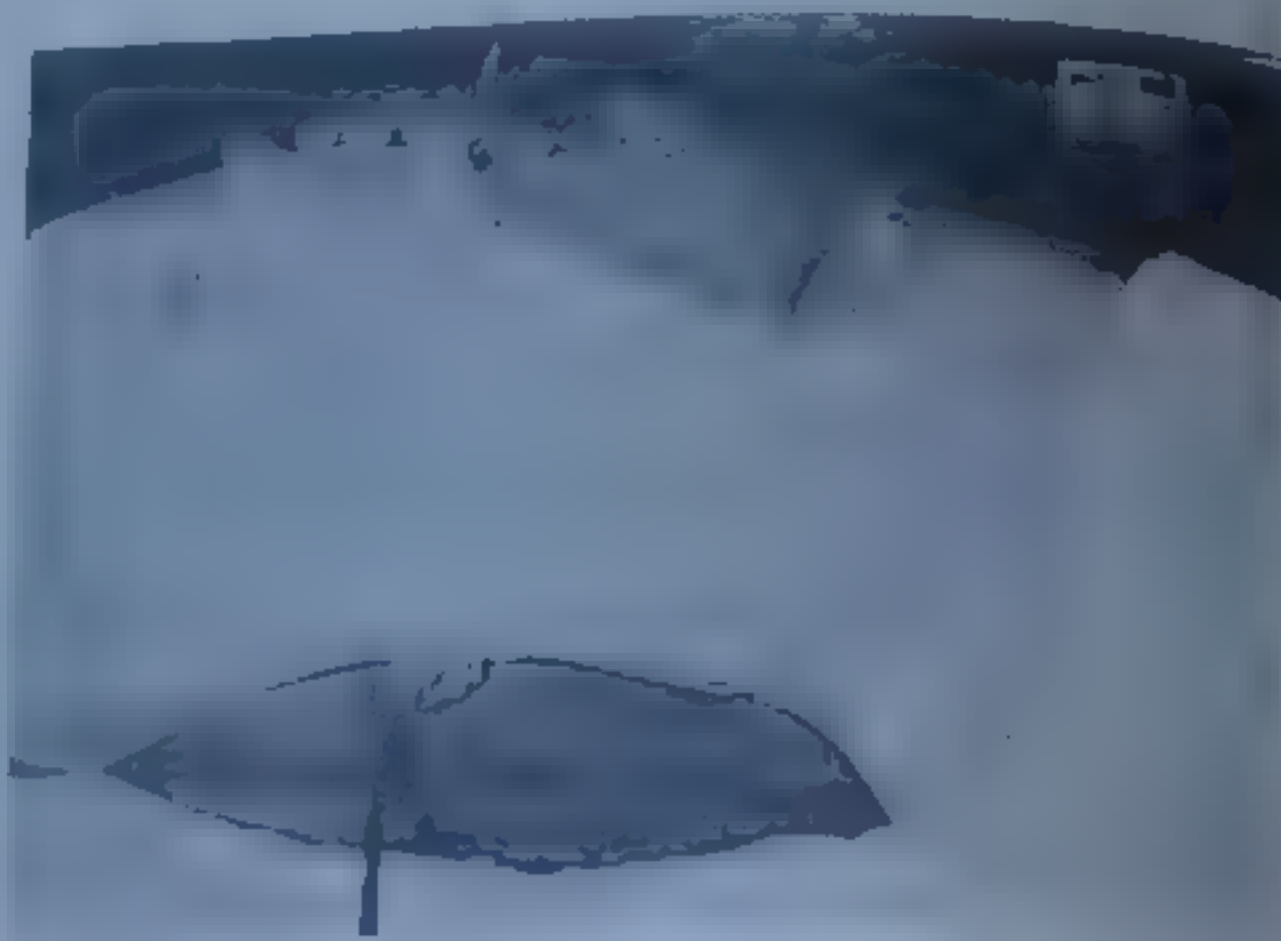


Active

Machine Settings

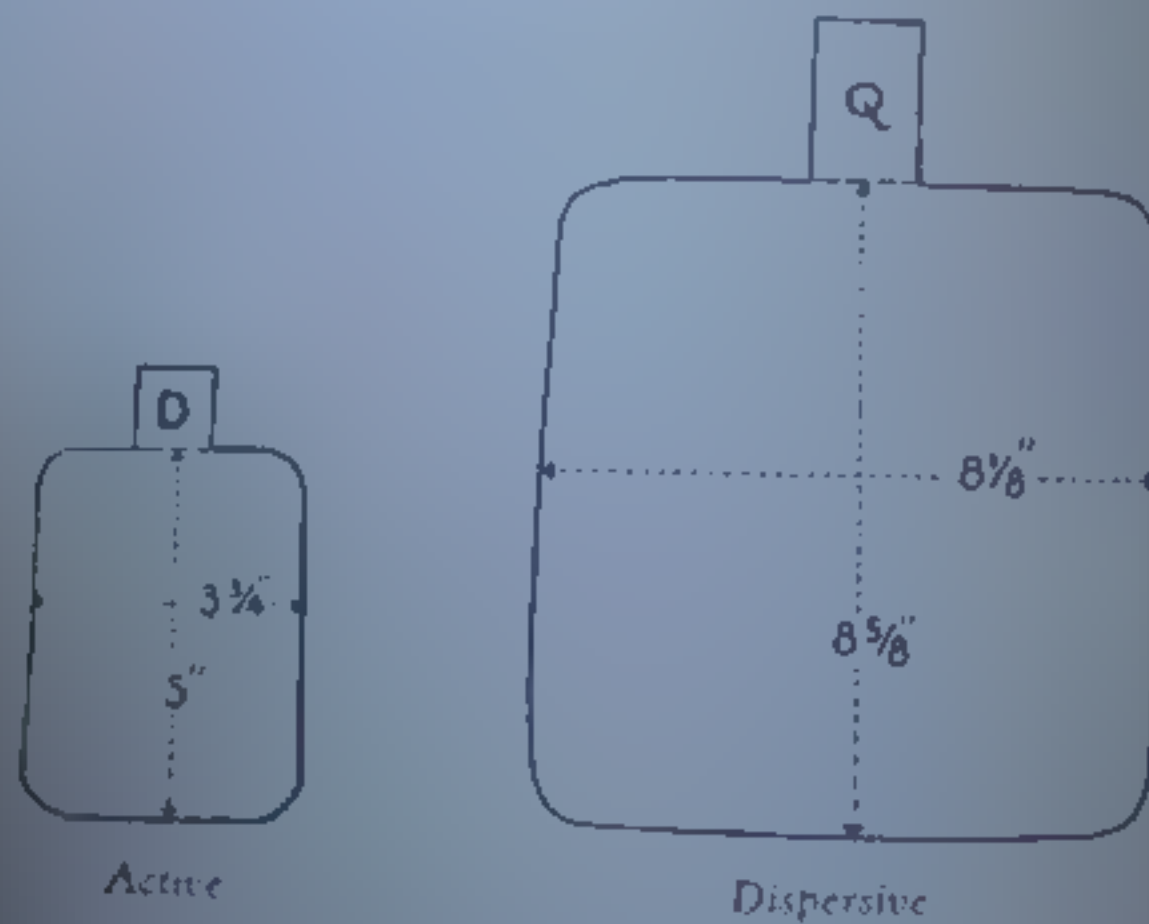
Frequency setting at	"5"
Voltage setting at	"C"
Intensity setting at	"4"

LIVER OR KIDNEY Double Plate Method



For kidney place active electrode on back.

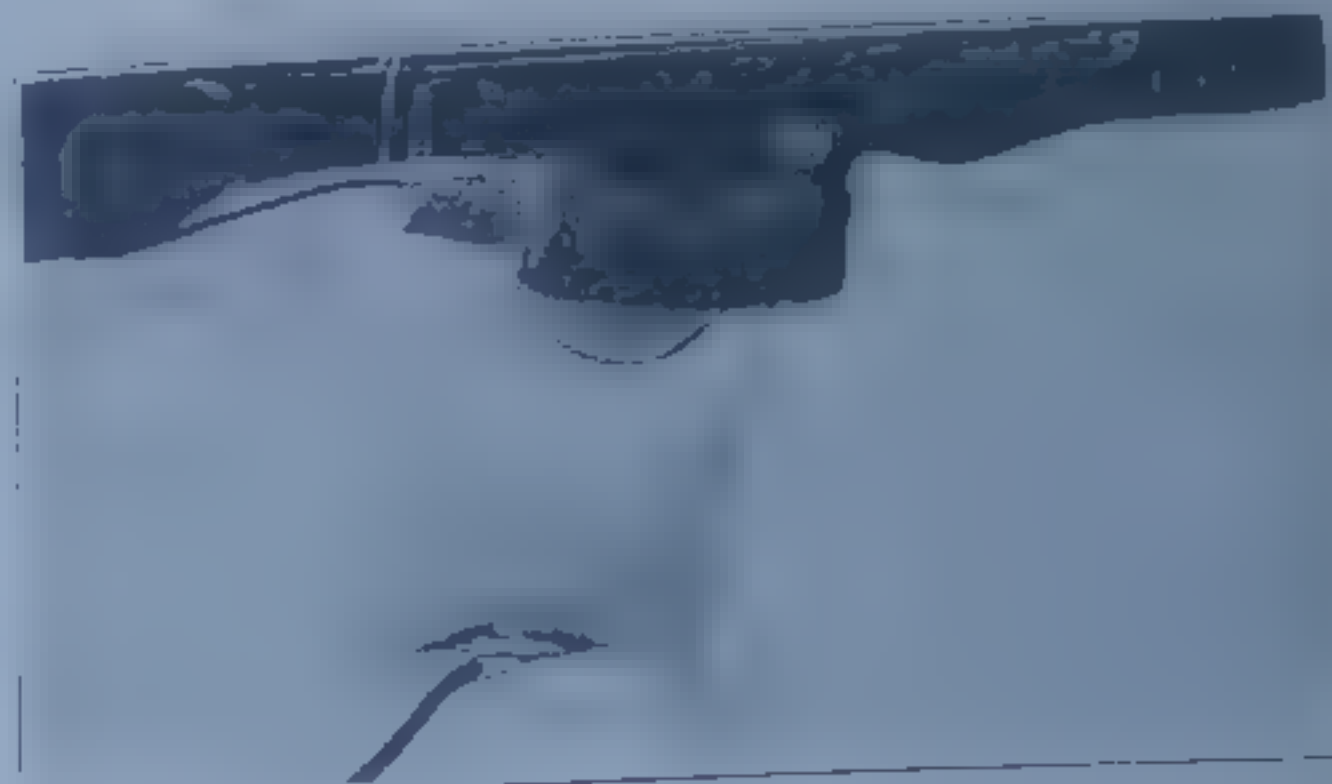
Electrodes Used



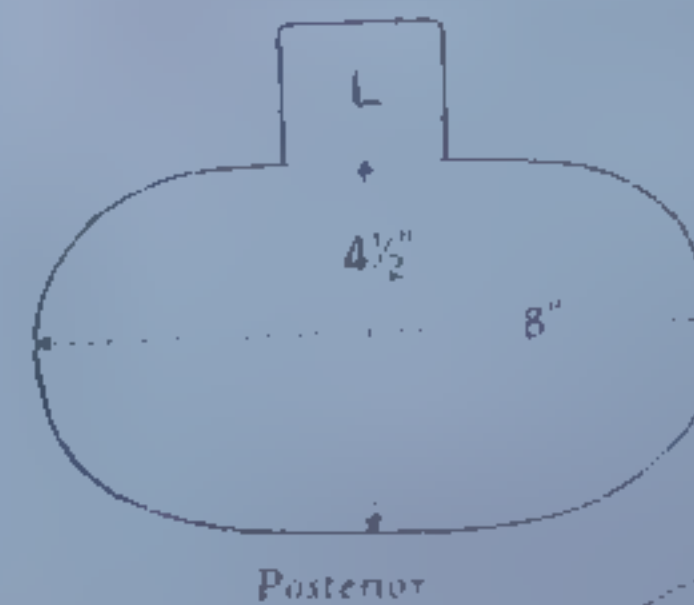
Machine Settings

Frequency setting at "S".
Voltage setting at "C".
Intensity setting at "4".

SACRO-ILIAC Double Plate Method



Electrodes Used



Posterior

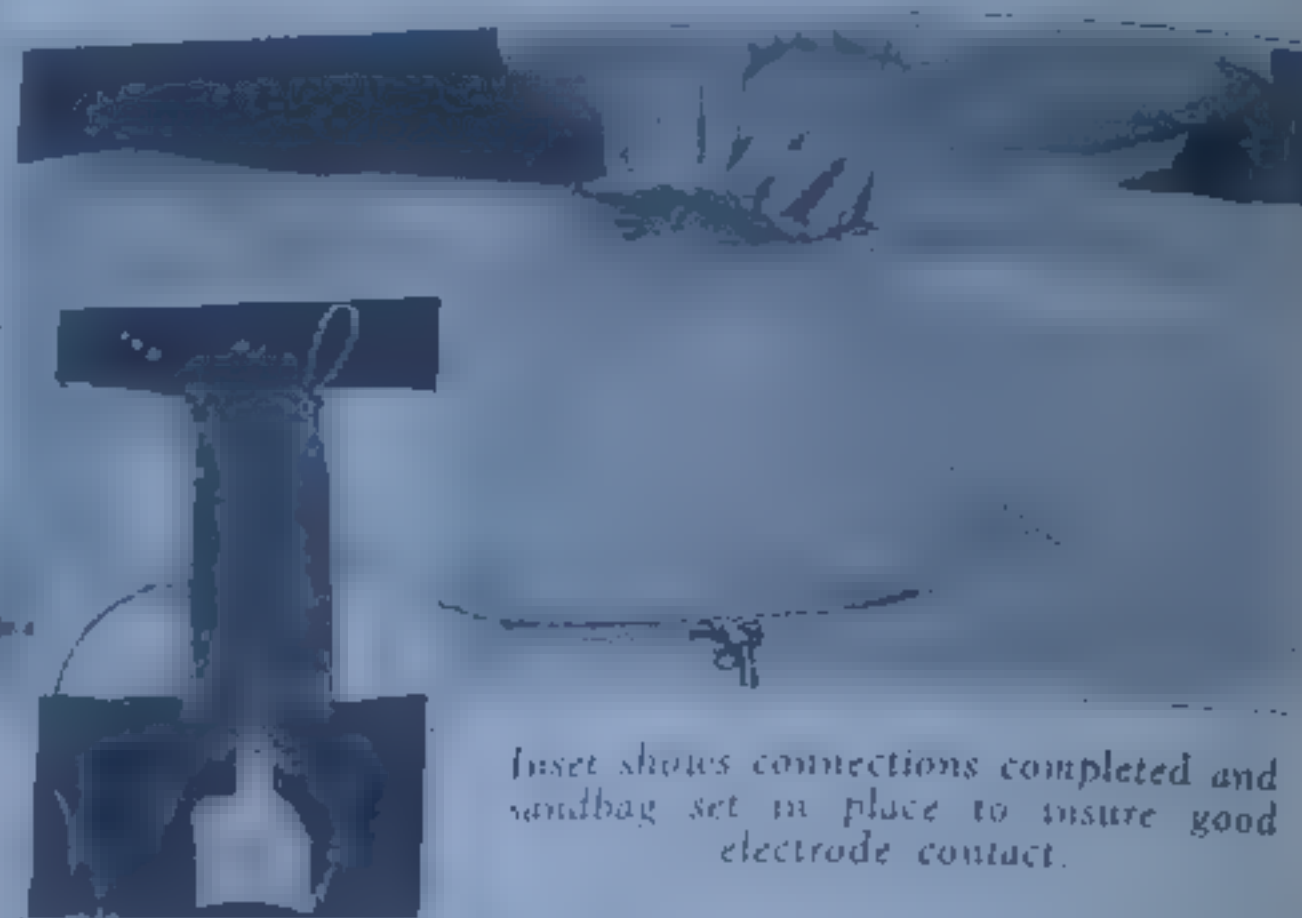


Anterior

Machine Settings

Frequency setting at "S".
Voltage setting at "B".
Intensity setting at "4".

PENIS Double Plate Method



Inset shows connections completed and sandbag set in place to insure good electrode contact.

Electrodes Used



Active

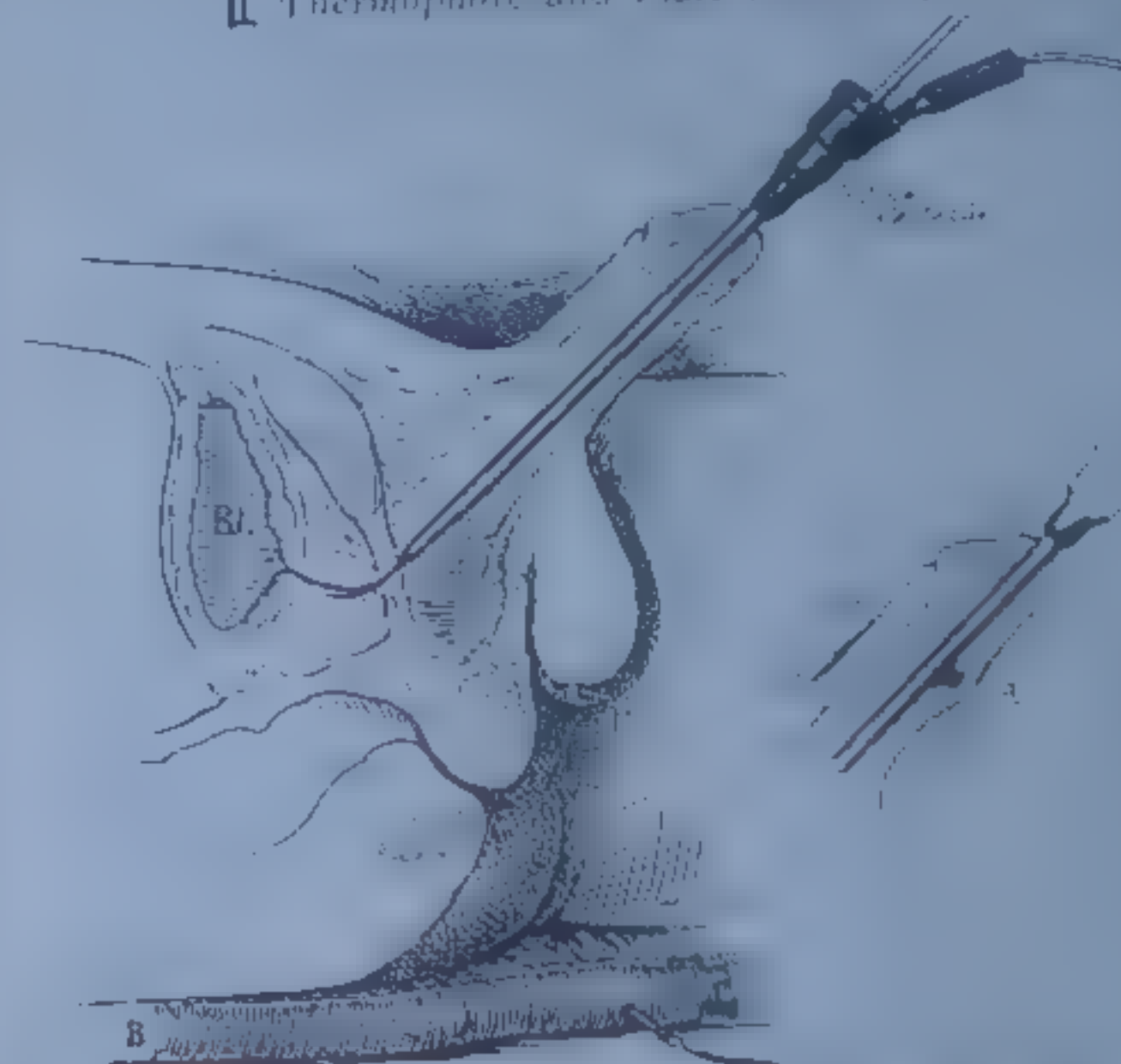


Dispersive

Machine Settings

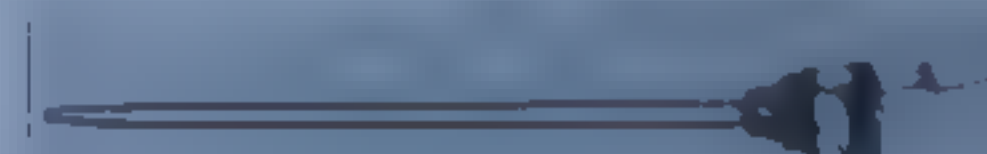
Frequency setting at "3"
Voltage setting at "C"
Intensity setting at "4"

MALE URETHRA Thermophore and Plate Method



Illustrating the thermophore as applied to the urethra of the male. Insert A shows the treatment of penile urethritis. Sometimes it is advantageous to place a flat electrode over the surface of the penis (at region A) so that the heat can be applied directly in the infected region. In applying heat to the urethra in gonorrheal urethritis, we believe the thermophore, as the inactive electrode, is preferable. (From *Illustrations in the Treatment of Genito-Urinary Diseases*, by Dr. J. H. O'Connor, Bruce Pub. Co.)

Electrodes Used



Coblyn Thermophore, No. 1000
(See page 1000)

Machine Settings

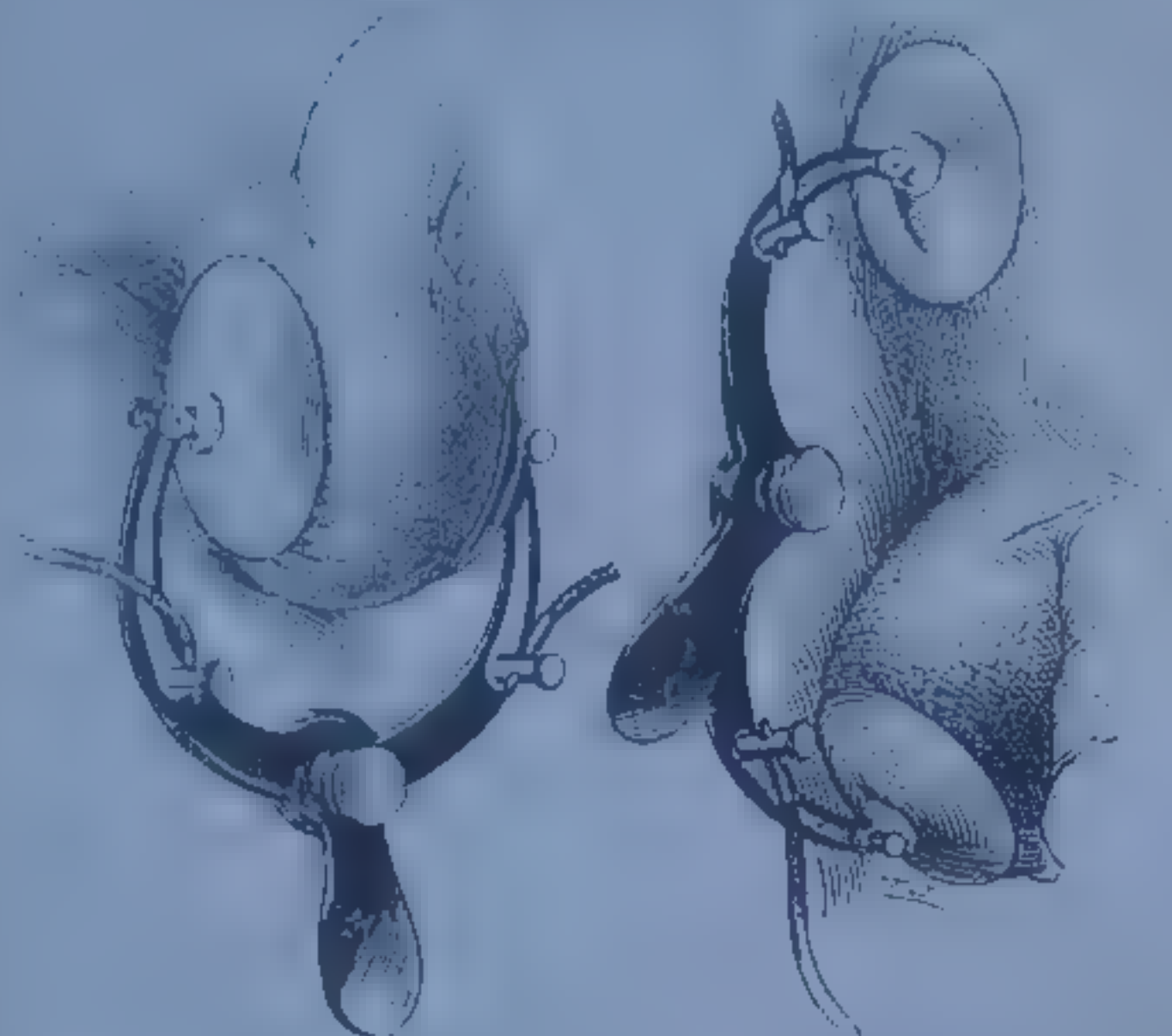
Frequency setting at "3"
Voltage setting at "C"
Intensity setting at "4"

STANDARDIZED TECHNIC CHART for VICTOR VARIO-FREQUENCY DIATHERMY APPARATUS

Region	Method	HEAD GROUP		Freq.	Volt	Int.	Time	M. A.	M. A.
		Electrodes							
Frontal Sinus	Double Plate	BB	AA	5	B	1			
Ear	Double Plate	K	A	5	B	1			
Ear	Binaural	Binaural		6	A	1			
Eye	Double Plate	P	AA	5	B	1			
UPPER EXTREMITY GROUP									
Finger	Double Cuff	I	I	6	C	4			
Finger	Thimble and Cuff	Thimble	I or N	3	C				12
Finger	Plate and Cuff	C or K	N	5	B	2-3			10
Wrist	Plate and Cuff	EE	N	5	D	4			14
Wrist	Double Plate	P	N	4	B	1			8
Elbow	Double Plate	G	P	4	B	2-3			16
Elbow	Double Cuff	N	G	4					10
Shoulder, AP	Double Plate	S	N	3	C	4			15
Shoulder, Med. L.	Double Plate	D	J	4	B	3			10
			V	3	A	4			
TORSO GROUP									
Chest, left	Double Plate	Q and E	C or T	3	C	4			
Chest, right	Double Plate	Q and E	C or T	2	B	4			
Spine	Double Plate	Q	O	3	C	4			
Liver or Kidney	Double Plate	Q	D	3	C	4			
Sacro-Iliac	Double Plate	L	EE	3	B	4			
Penis	Double Plate	R	FF	3	C	4			
Male Urethra	Corbus and Plate	Corbus	EE	3	C	4			
Scrotum	Scrotal	Scrotal		4	C	4			
Prostate	Prostatic and Plate	Pros.	EE	3	C	4			
Female Urethra	Corb., Belt, Plate	Corb. & FF	or F	4	A	3			
Cervix	Corb., Belt, Plate	Corb., C and C		4	A	3-4			
Cervix	Chapman, Belt	Chapman	F	3	C	4			
LOWER EXTREMITY GROUP									
Hip	Double Plate	B	C	3	B	4			
Knee	Double Plate	K	K	4	C	4			
Knee	Double Cuff	N	M	3	B	4			
Ankle	Plate and Cuff	M	EE	3	A	4			
Heel	Plate and Cuff	M	EE	3	B	4			
Toes	Plate and Cuff	N	EE	3	B	4			
MISCELLANEOUS SETTINGS									
Method	Diap. Elec.	Act. Elec.		Freq.	Volt	Int.	Time	M. A.	M. A.
Bipolarized Card		EE, (2), FF (2)		3	C	4			
Autocou.	3" Auto. Couch	Lge. Hlle.		3		4			
Autocou.	3" Auto. Couch	Abdom. Plate and Handle		3		4			
Autocou.	Thin Auto. Couch	Abdom. Plate and Handle		5	D	4			
Coagulation	Q	Surgical Set		3	C	4			
Desiccation		Pulguration Set		3		4			
V. and V. and		As desired		3		4			

SCROTUM

Scrotal Electrode Method



Shows the enlarged epididymis and accompanying adhesion (exaggerated). The two poles are placed so as to enable the heat to pass directly between the globus major and minor.

Shows the treatment as applied to the lower pole and the vas as it emerges from the external ring. (From *Diathermy in the Treatment of Genito-Urinary Diseases*, by Corbus and O'Connor; Bruce Pub. Co.)

Electrodes Used



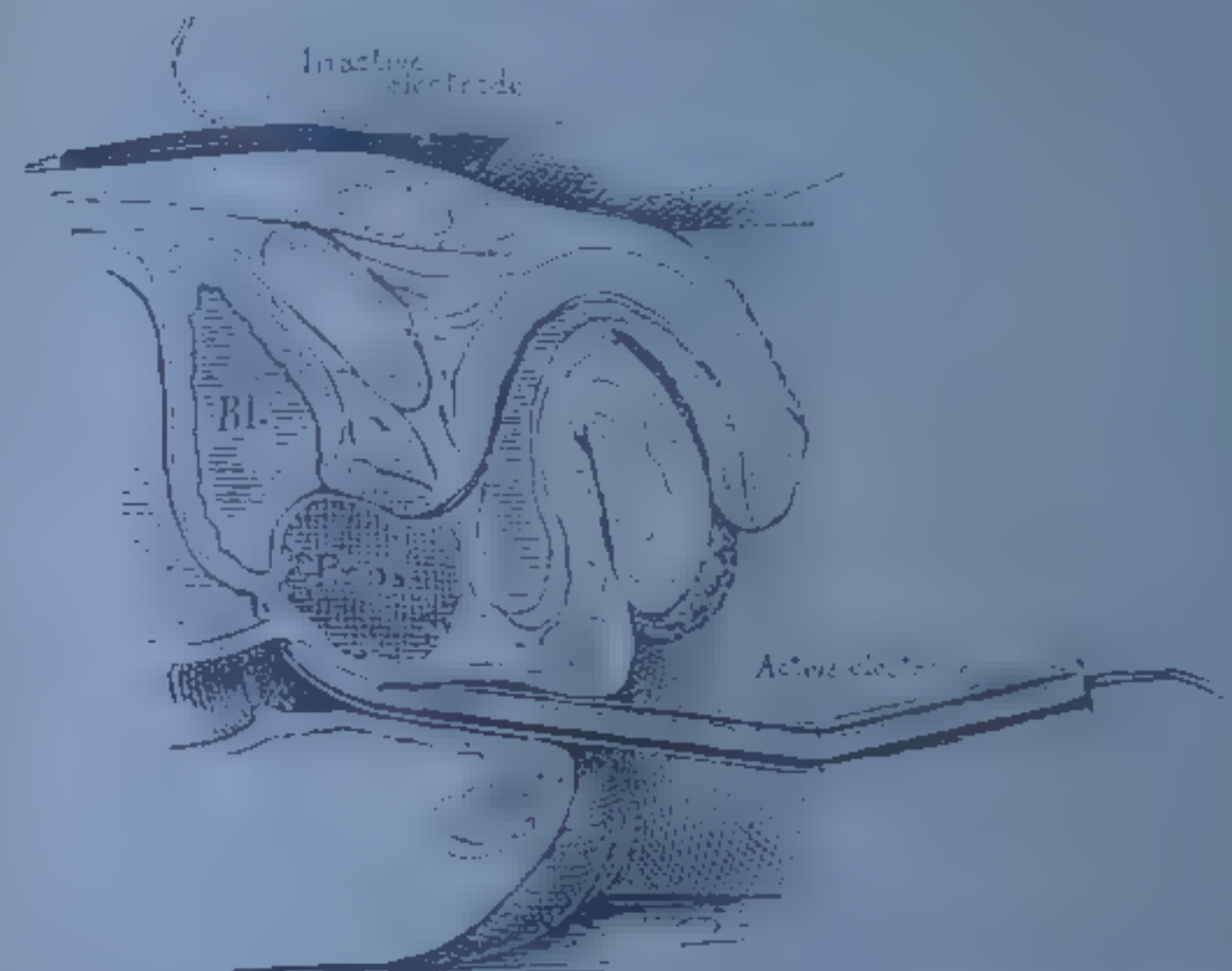
Corbus Scrotal Thermophore (No. J6050)

Machine Settings

Frequency setting at "4"
Voltage setting at "0"
Intensity setting at "4"

PROSTATE

Prostatic Electrode and Plate Method



Illustrating the application of the rectal thermophore. (From *Diathermy in the Treatment of Genito-Urinary Diseases*, by Corbus and O'Connor; Bruce Pub. Co.)

Electrodes Used



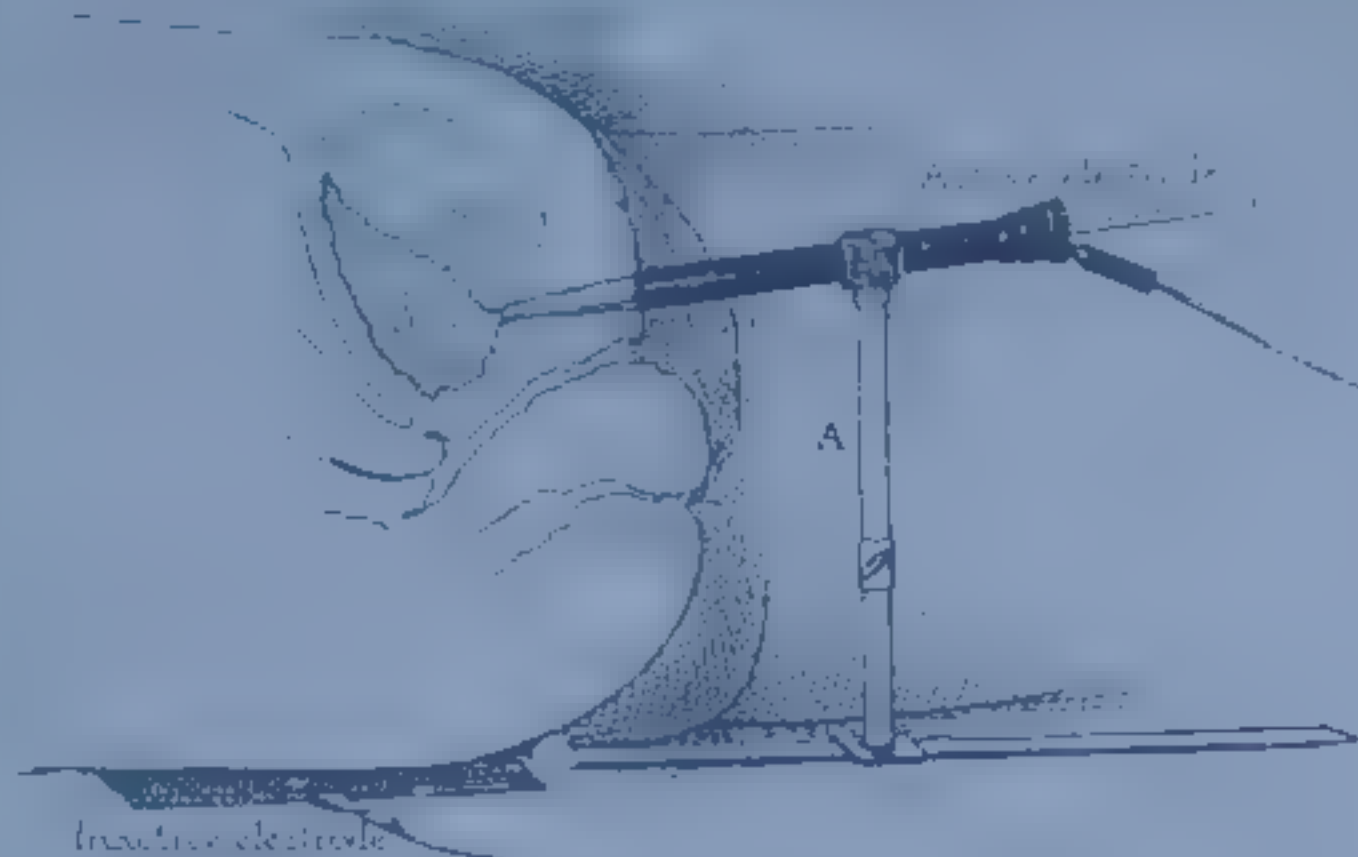
Prostatic Electrode (No. J6153)

Machine Settings

Frequency setting at "3"
Voltage setting at "0"
Intensity setting at "4"

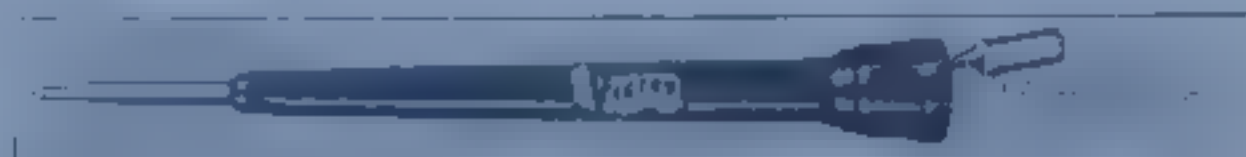
FEMALE URETHRA

Corbus Thermophore and Plate or Belt Method

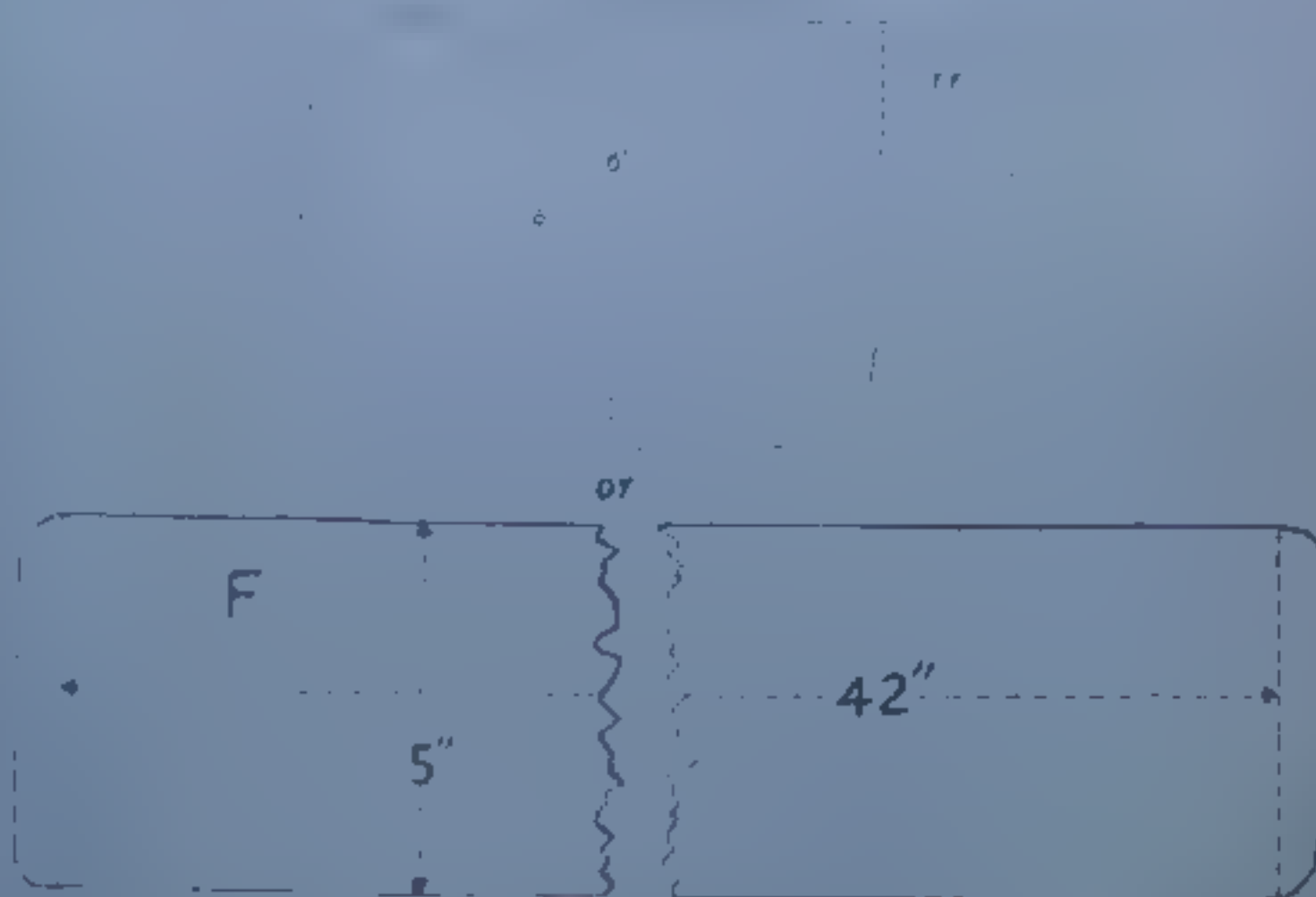


Illustrating the thermophore as used in the treatment of diseases of the female urethra. The inactive electrode may be placed either beneath the buttocks or over the supra-pubic region; or the patient may lie upon the autocondensation pad. (From *Diathermy in the Treatment of Genito-Urinary Diseases*, Corbus and O'Connor; Bruce Pub. Co.)

Electrodes Used



Corbus Thermophore (No. J6140) with sheath for application in cervix uteri.



Belt Electrode

Machine Settings

Frequency setting at "4"

Voltage setting at "A"

Intensity setting at "5"

CERVIX

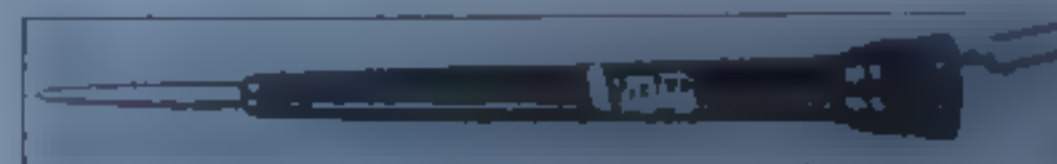
Corbus Thermophore and Double Plate or Belt Method



Method of applying diathermy in gonorrheal endocervicitis.

By means of the diathermy current the heat is passed between the two electrodes, the active electrode being the smaller; localizes the heat directly around it. The thermometer that passes into the core of the instrument registers approximately the degree of heat in the tissues immediately surrounding the electrode. (From *Diathermy in the Treatment of Genito-Urinary Diseases*, by Corbus and O'Connor, Bruce Pub. Co.)

Electrodes Used



Corbus Thermophore (No. J6140)



Note: Instead of the plate electrodes, 1" thermophore (No. J6140) electrode "F" is sometimes used.

Machine Settings

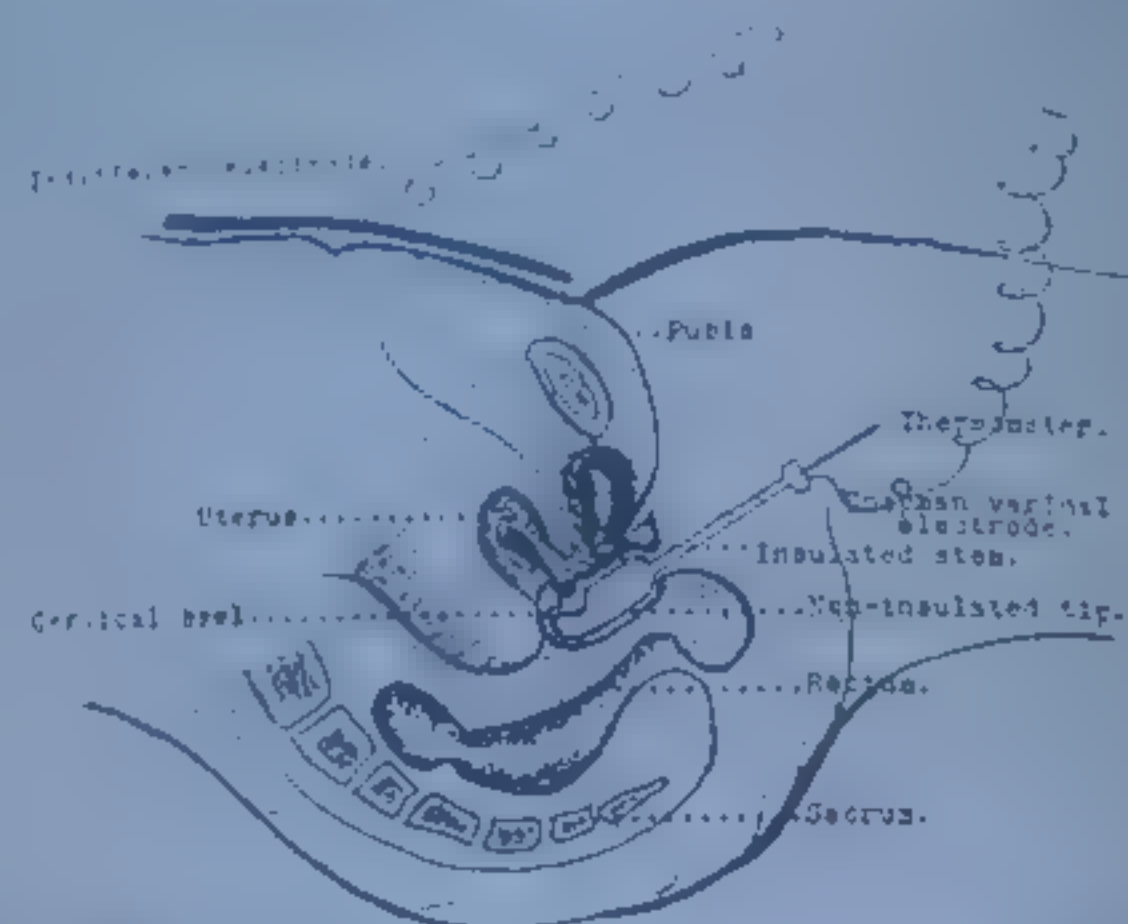
Frequency setting at "4"

Voltage setting at "A"

Intensity setting at "5"

CERVIX

[Victor Chapman Electrode and Belt Method]

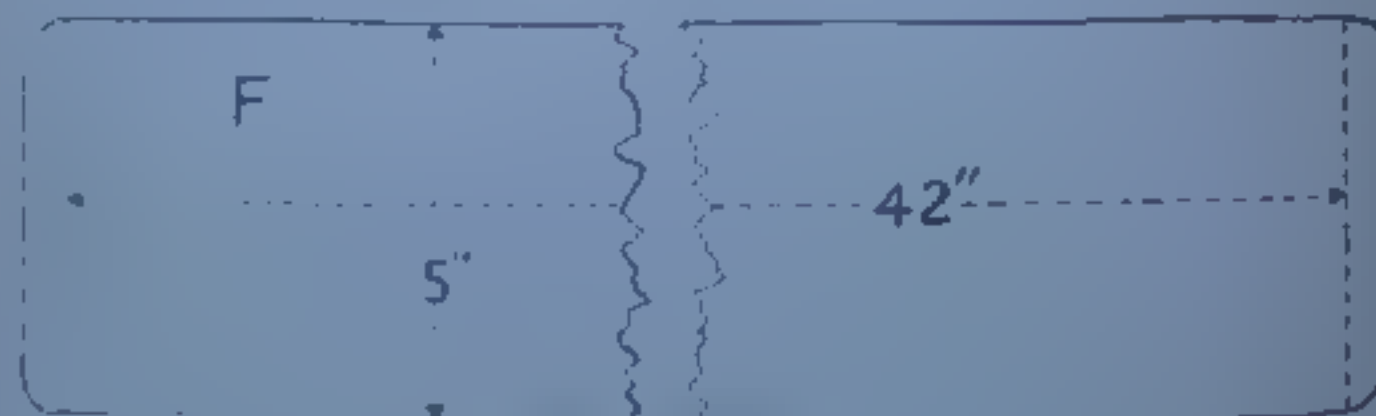


Cross section of female pelvis showing Chapman vaginal electrode in position (*Diathermy in Gynecology*, W. B. Chapman, M. D., Chicago, Am. Jour. Phys. Therapy, May, 1927).

Electrodes Used



Chapman Vaginal Electrode (No. J6198)



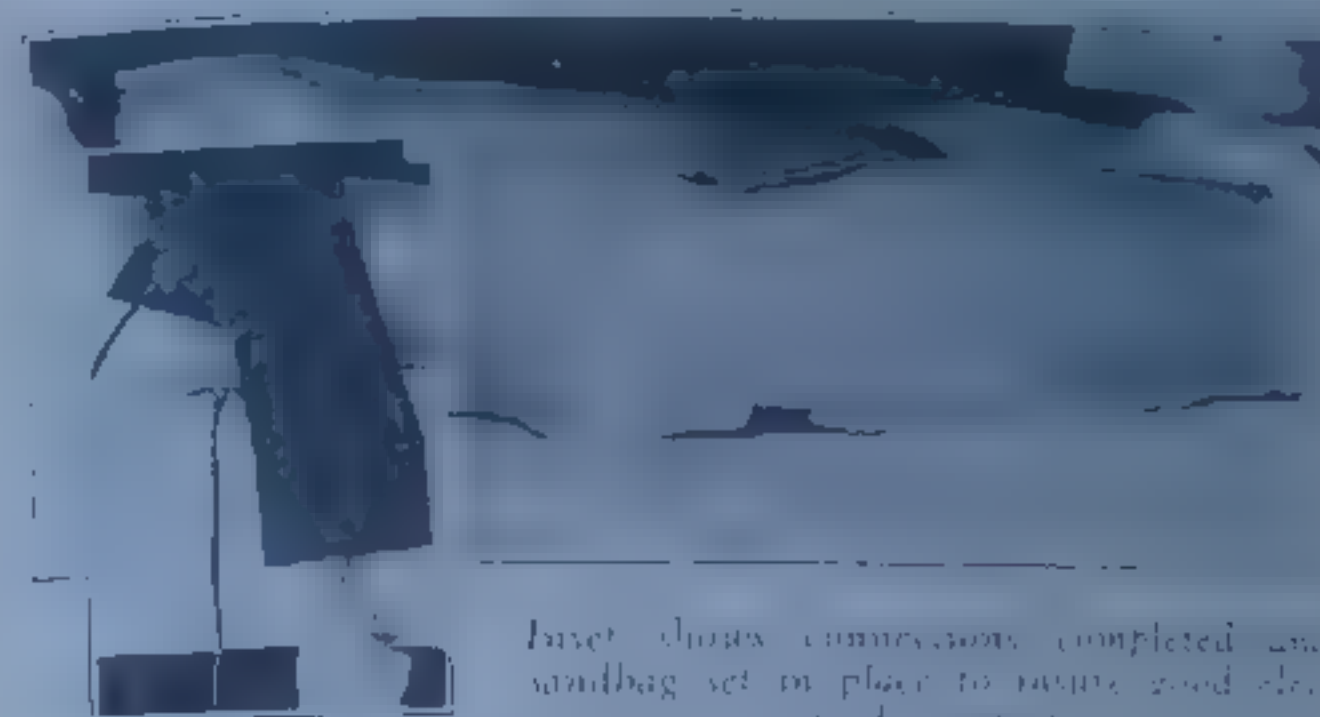
Belt Electrode

Machine Settings

Frequency setting at "3".
Voltage setting at "C".
Intensity setting at "4".

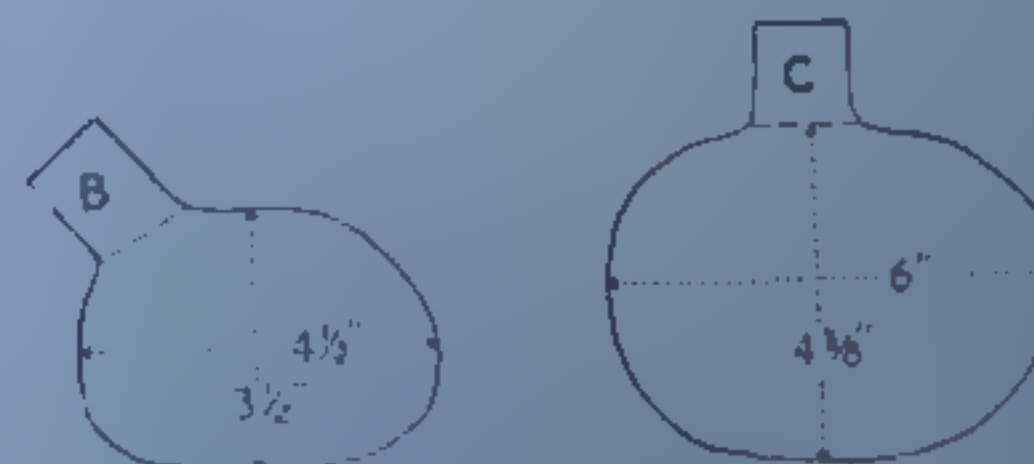
HIP

[Double Plate Method]



Inset shows connections completed and sandbag set in place to insure good electrode contact.

Electrodes Used



Machine Settings

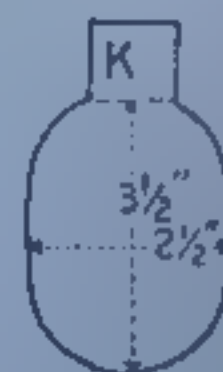
Frequency setting at "3".
Voltage setting at "B".
Intensity setting at "4".

Notes

KNEE *Double Plate Method*



Electrodes Used



Machine Settings

Frequency setting at "4".

Voltage setting at "C".

Intensity setting at "4".

NOTES

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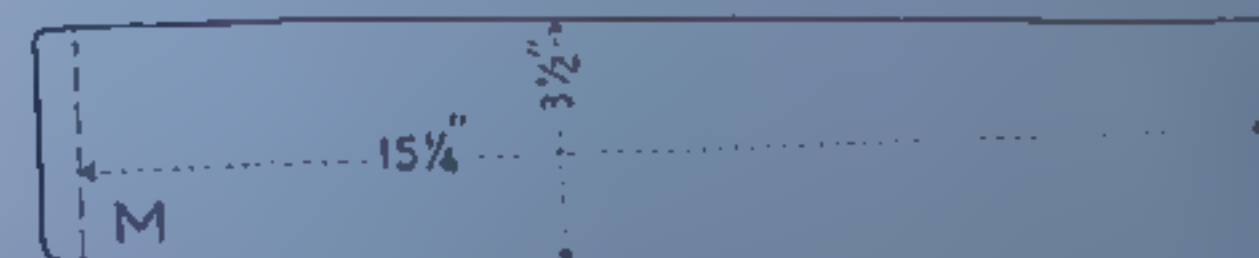
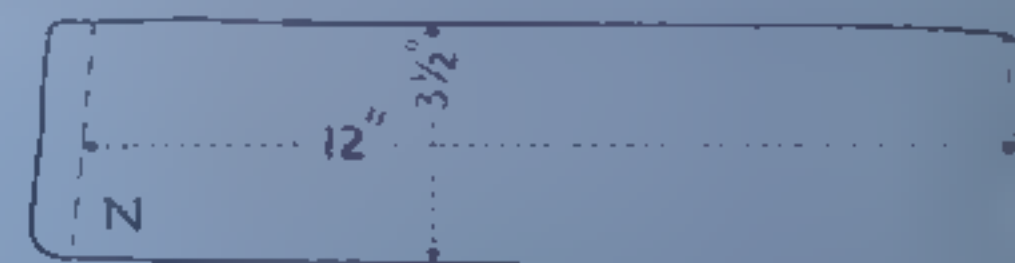
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KNEE *Double Cuff Method*



Electrodes Used



Machine Settings

Frequency setting at "3".

Voltage setting at "B".

Intensity setting at "4".

NOTES

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ANKLE

Plate and Cuff Method



Electrodes Used



Machine Settings

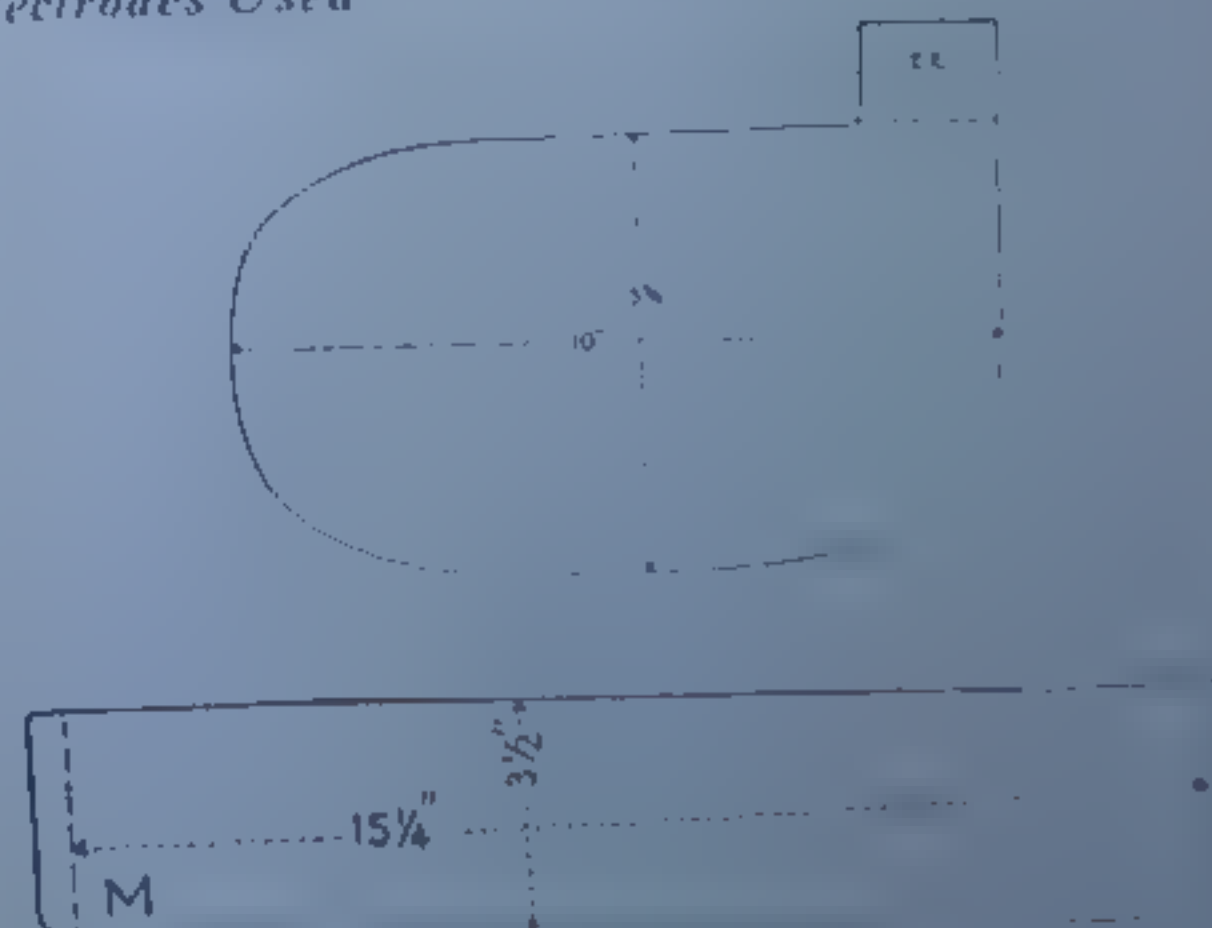
Frequency setting at "3"
Voltage setting at "A"
Intensity setting at "4"

HEEL

Cuff and Plate Method



Electrodes Used

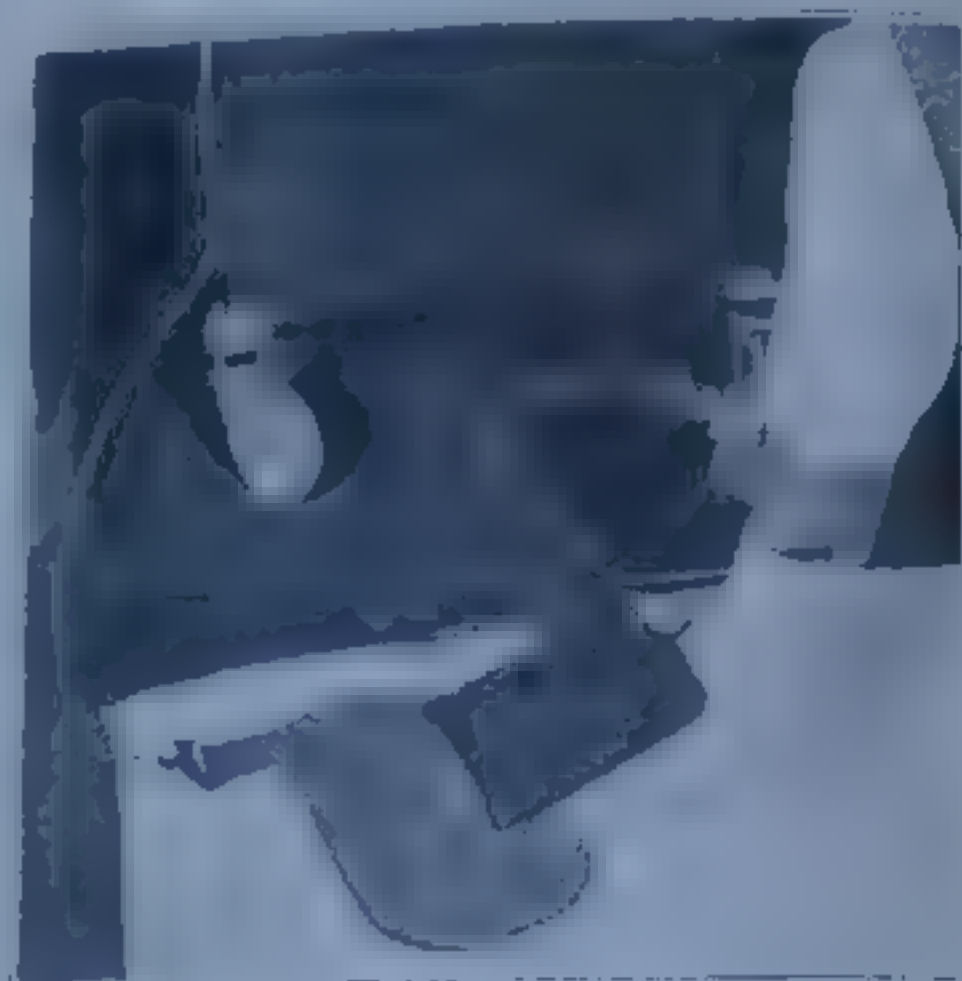


Machine Settings

Frequency setting at "3"
Voltage setting at "B"
Intensity setting at "4"

TOES

Cuff and Plate Method



Electrodes Used

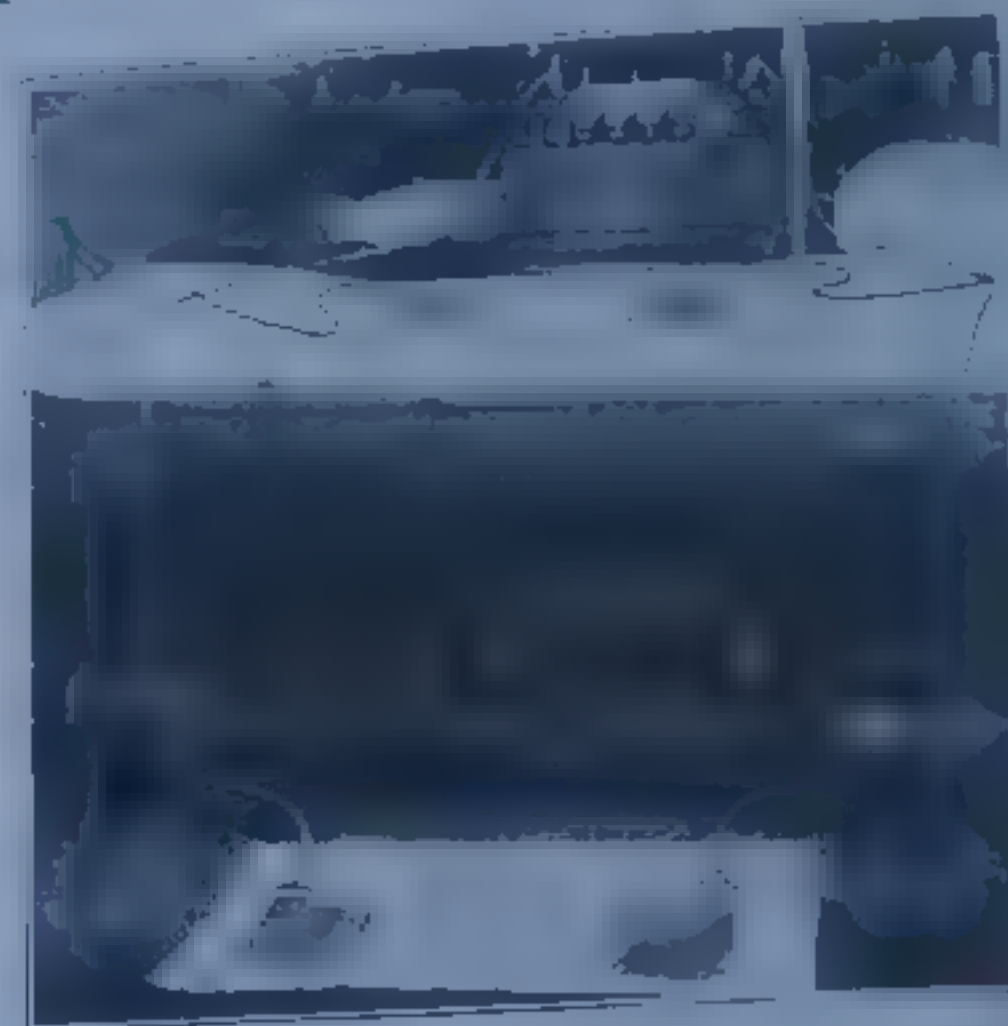


Machine Settings

Frequency setting at "3".
Voltage setting at "B".
Intensity setting at "4".

BIFURCATED CORD TECHNIC

For Treatment to More Than One Joint



In the above illustration the connections to the four electrodes are by means of two bifurcated cords (catalog number J60S2). The patient is placed in a sitting position so that each foot rests completely on the floor electrodes (FF), with the forearms resting on electrodes (EE).

Electrodes Used

2 of each



Arms



Feet

Machine Settings

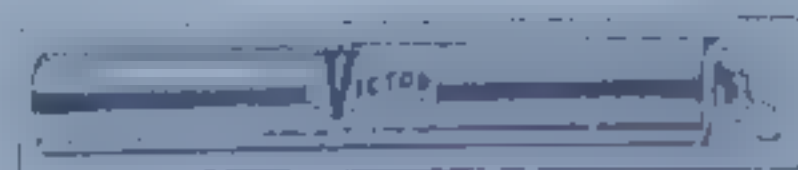
Frequency setting at "3".
Voltage setting at "C".
Intensity setting at "4".

[AUTO-CONDENSATION]

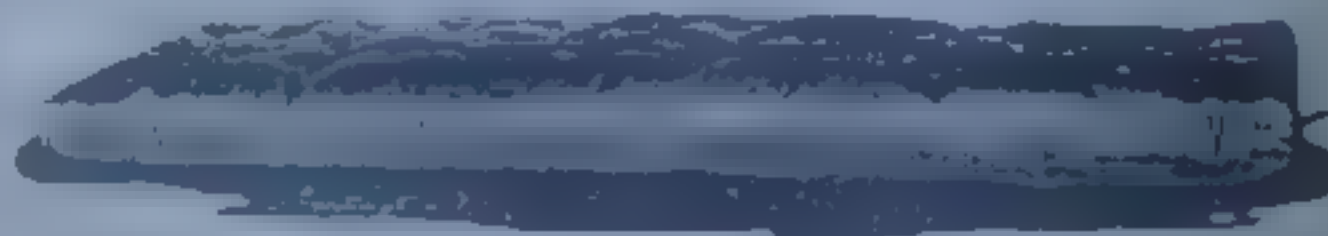
For Conditions Requiring 400 to 600 M.A.



Electrodes Used



Large Metal Handle Electrode (No. J3104)



5' Auto-condensation Couch (No. J3126)

Machine Settings

Use auto-condensation terminals. Left hand terminal to comb. Right hand terminal to handle electrode.

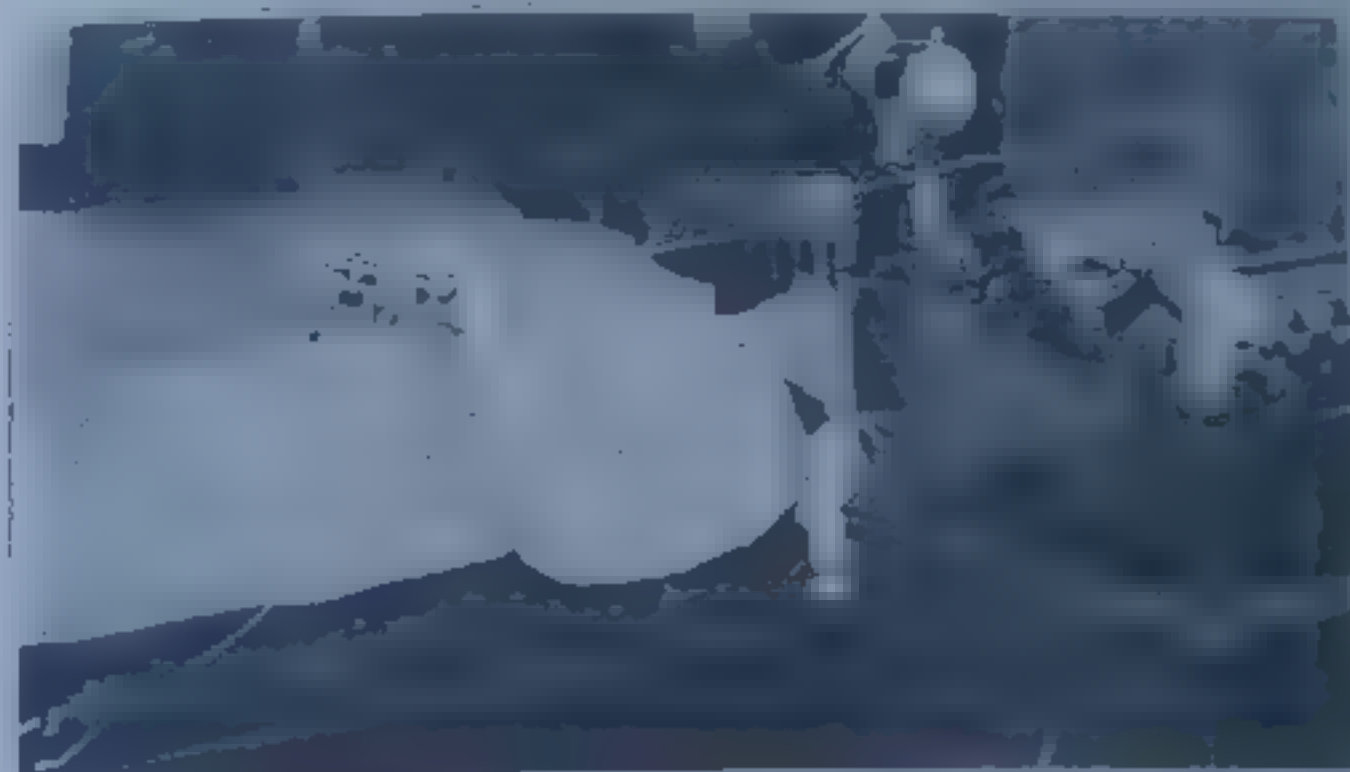
Frequency setting at "3".

Voltage setting immaterial when using auto-condensation coil.

Intensity setting at "4".

[AUTO-CONDENSATION]

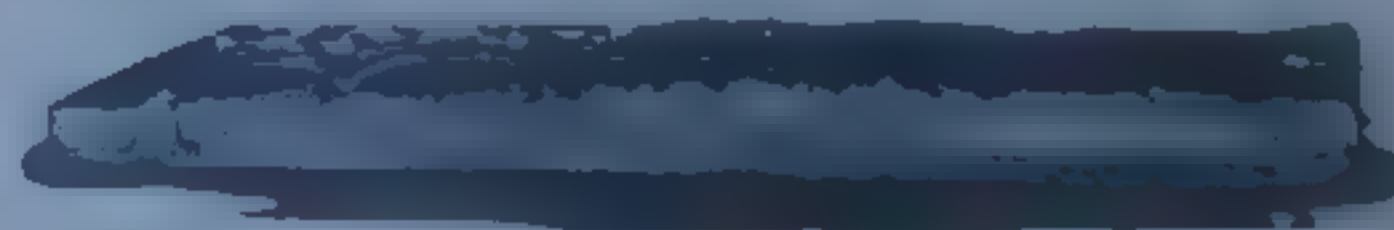
For Conditions Requiring From 400 to 600 M.A.



Electrodes Used



*Abdominal Plate and Large Metal Handle Plate
(Nos. J3157 and J3158)*



3' Auto-condensation Couch (No. J3127)

Machine Settings

Hook up same as for 400 to 600 M.A. machine.

Frequency setting at "3".

Voltage setting immaterial when using auto-condensation coil.

Intensity setting at "4".

[AUTO-CONDENSATION]

For Conditions Requiring More Than 1000 M A



Electrodes Used



*Abdominal Plate and Large Metal Handle Electrode
(Nos. J6187 and J5104)*

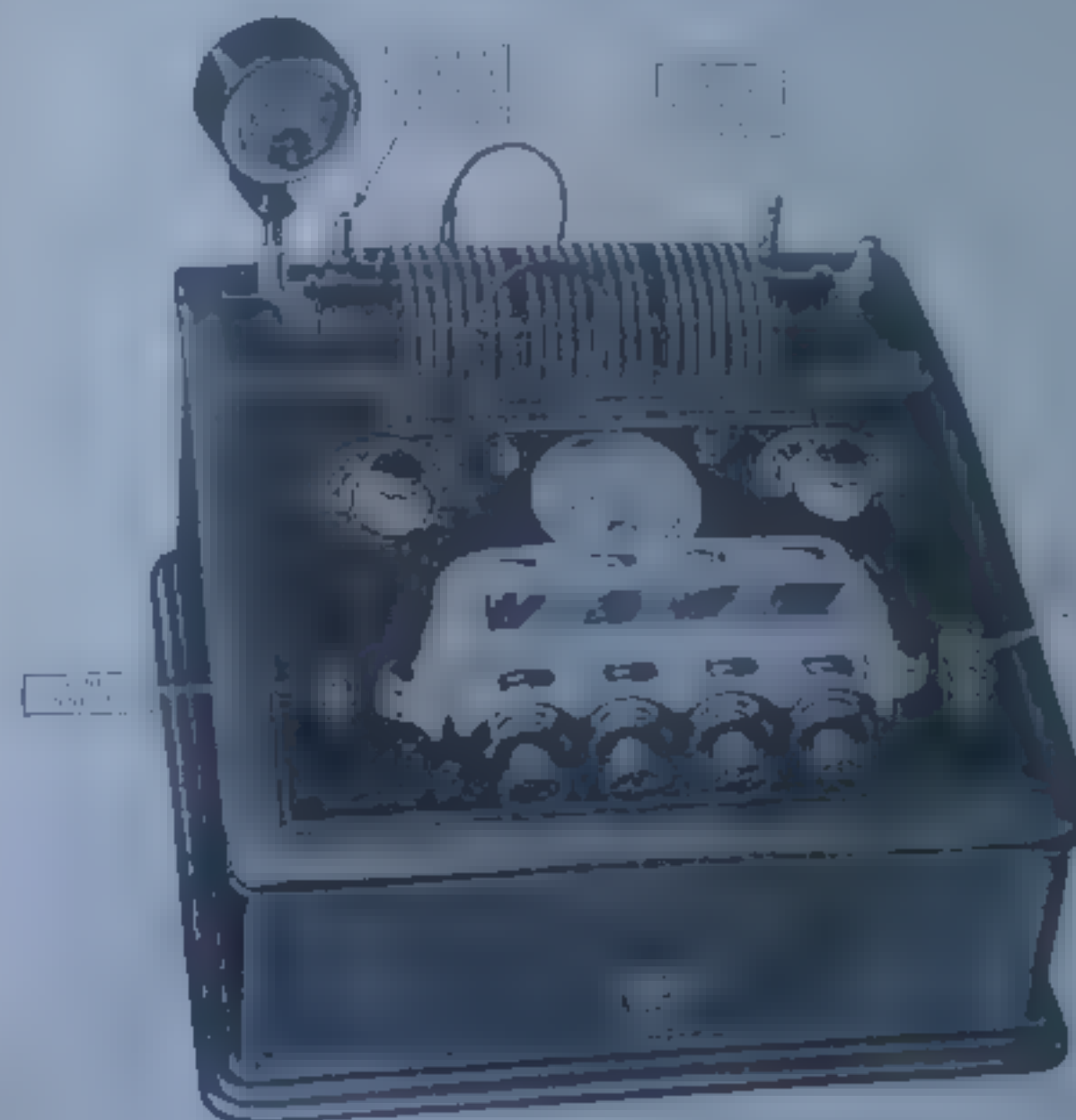


Thin side of Auto-condensation Couch (No. J5126)

Machine Settings

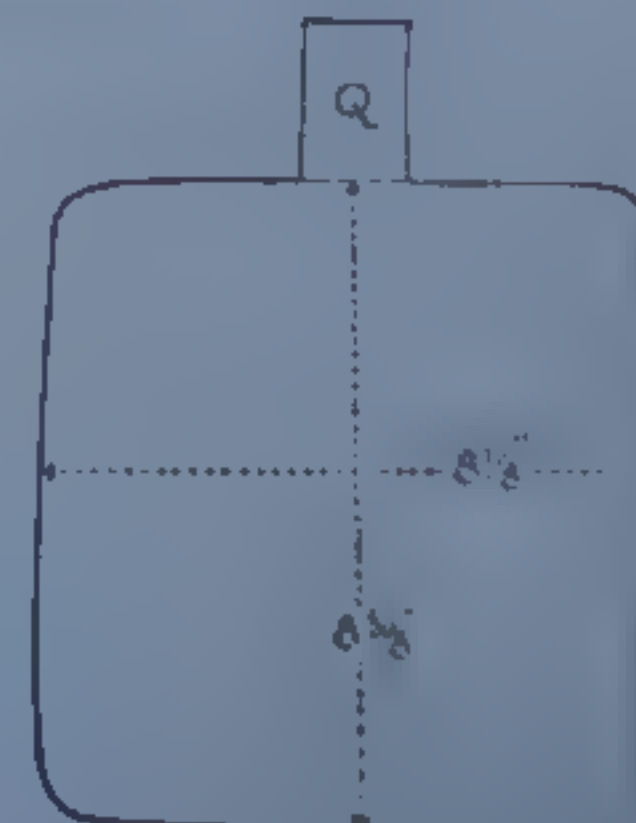
Use diathermy terminals.
Frequency setting at "5".
Voltage setting at "D".
Intensity setting at "4".

[ELECTROCOAGULATION]



Electrodes Used

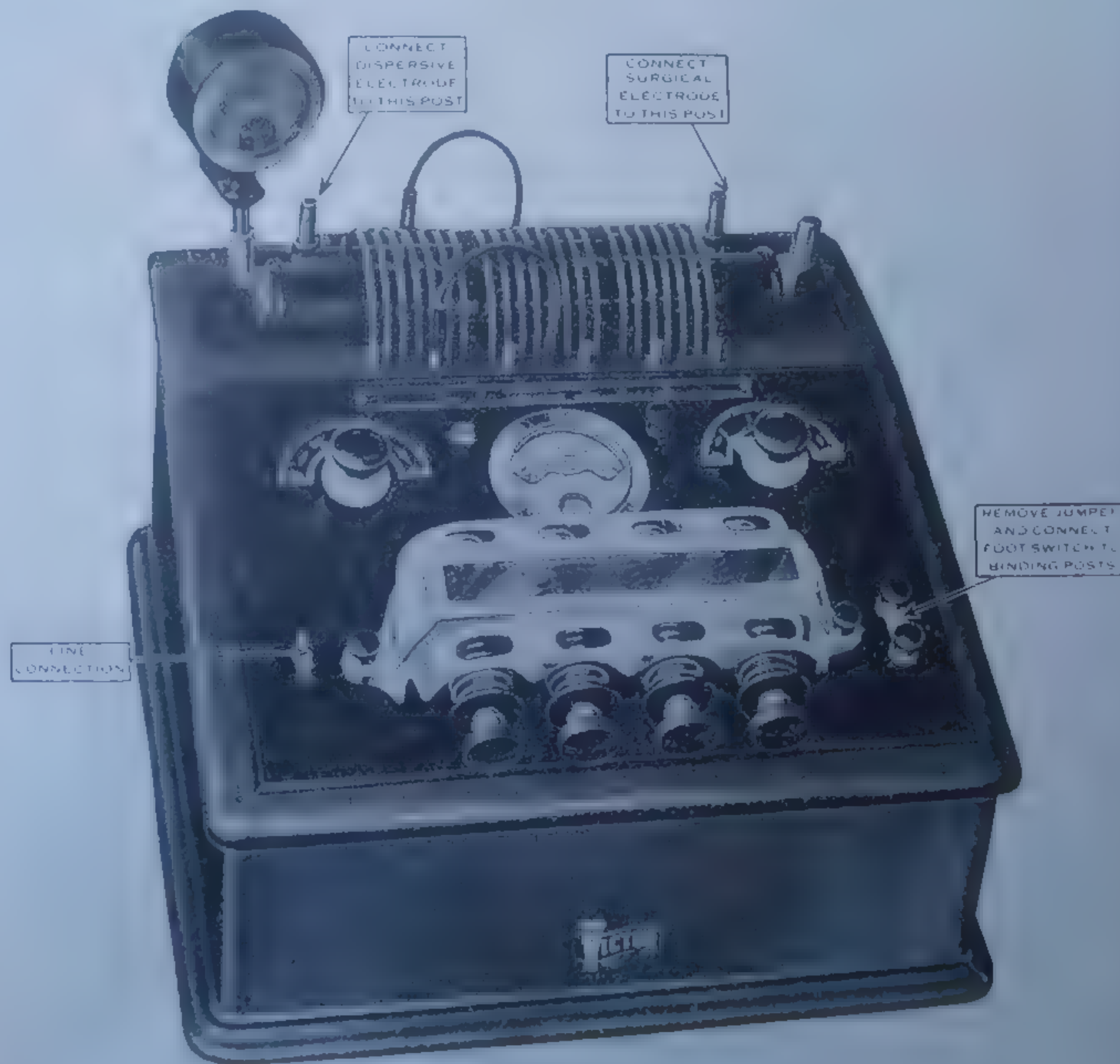
Surgical Set and



Machine Settings

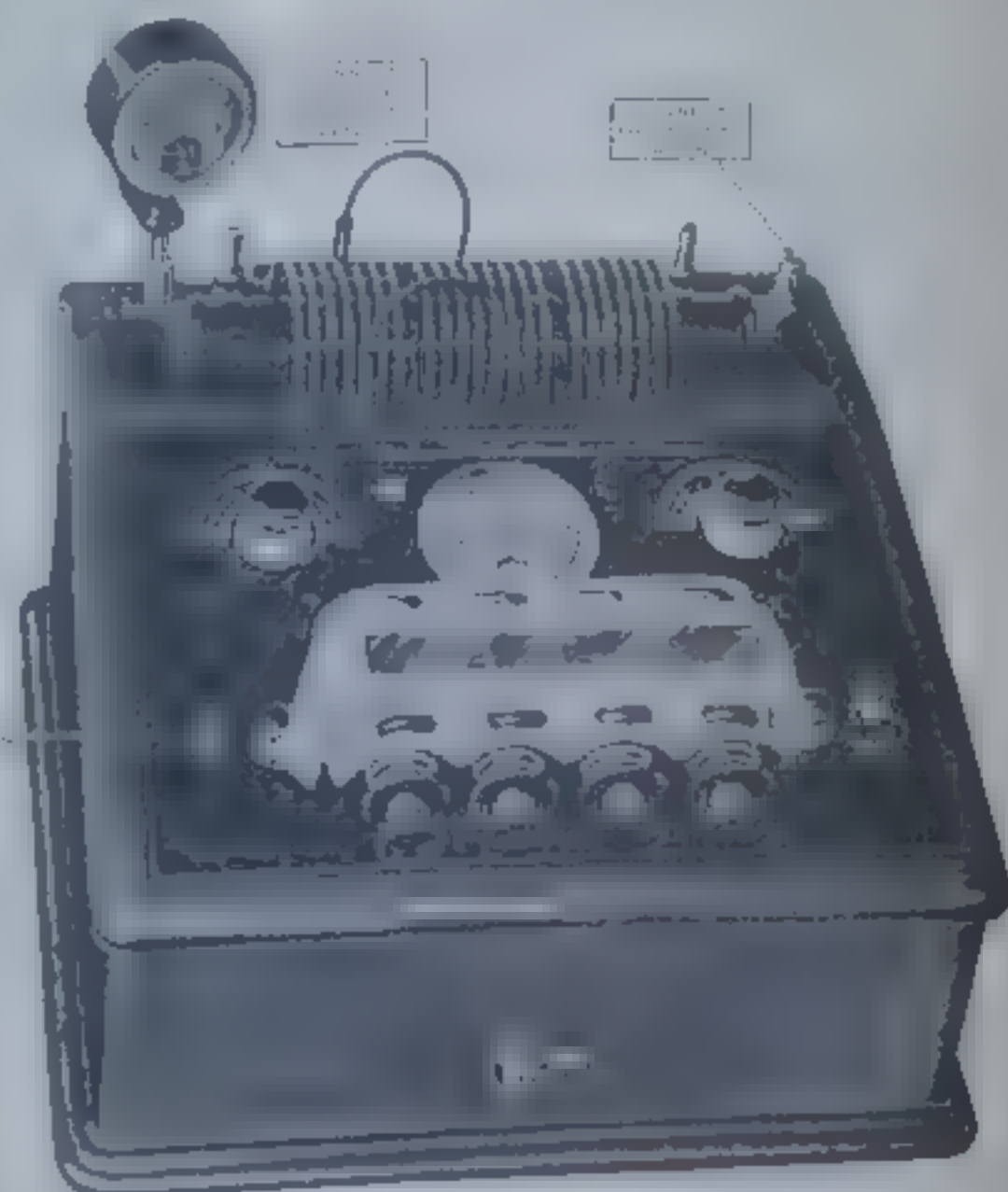
Use diathermy terminals.
Frequency setting at "3".
Voltage setting at "C".
Intensity setting at "4".

{ ELECTROCOAGULATION }



Electrodes Used

DESICCATION AND FULGURATION



Electrodes Used

Fulguration Set

Machine Settings

Use auto condensation terminals. Right terminal grounded.
(Do not ground if a very fine spark is desired.)

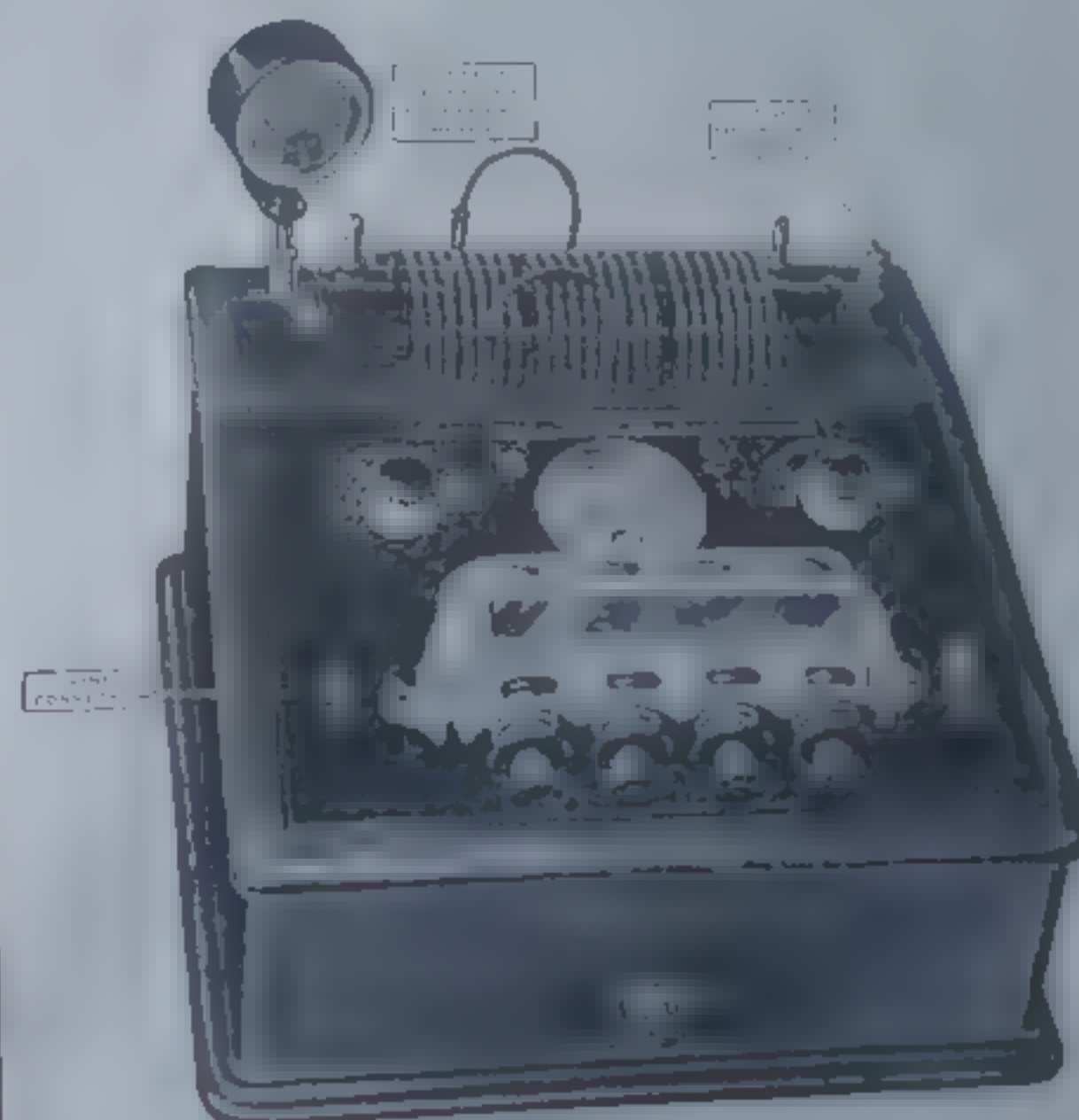
Frequency setting at "3".

Voltage setting immaterial when using auto-condensation coil.

Intensity setting at "4".

Notes: The fulguration set is used for the treatment of skin lesions. It is a high-frequency electrocautery unit. The fulguration set is used for the treatment of skin lesions. It is a high-frequency electrocautery unit.

VACUUM OR NON-VACUUM ELECTRODE TECHNIC



Electrodes Used

Vacuum or non vacuum surface electrodes (use talcum powder on skin surface to prevent electrode from adhering to skin). Different degrees of counter irritation may be obtained by increasing or decreasing the distance between electrode and skin.

Machine Settings

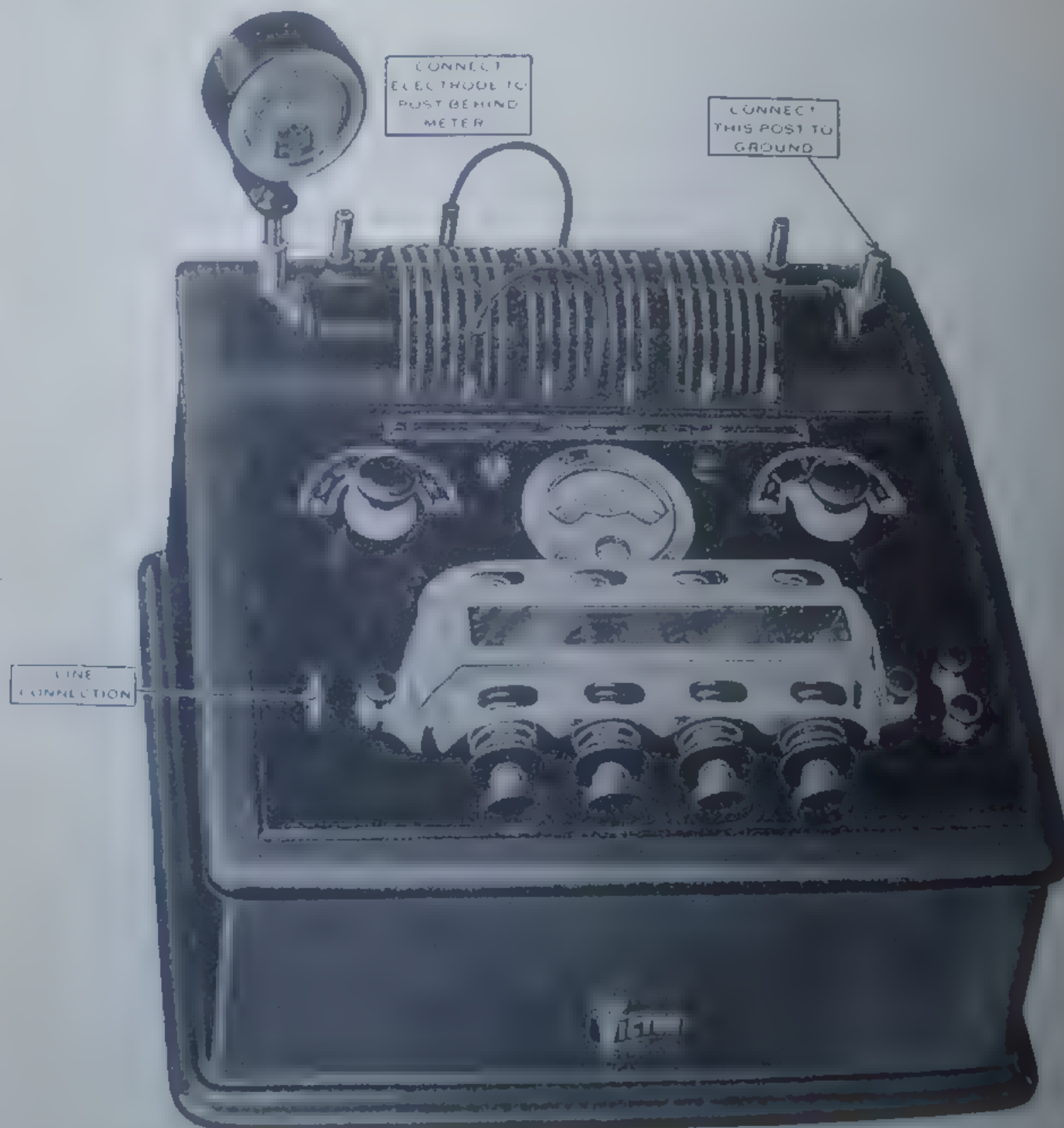
Use auto condensation terminals. Right terminal grounded.

Frequency setting at "3".

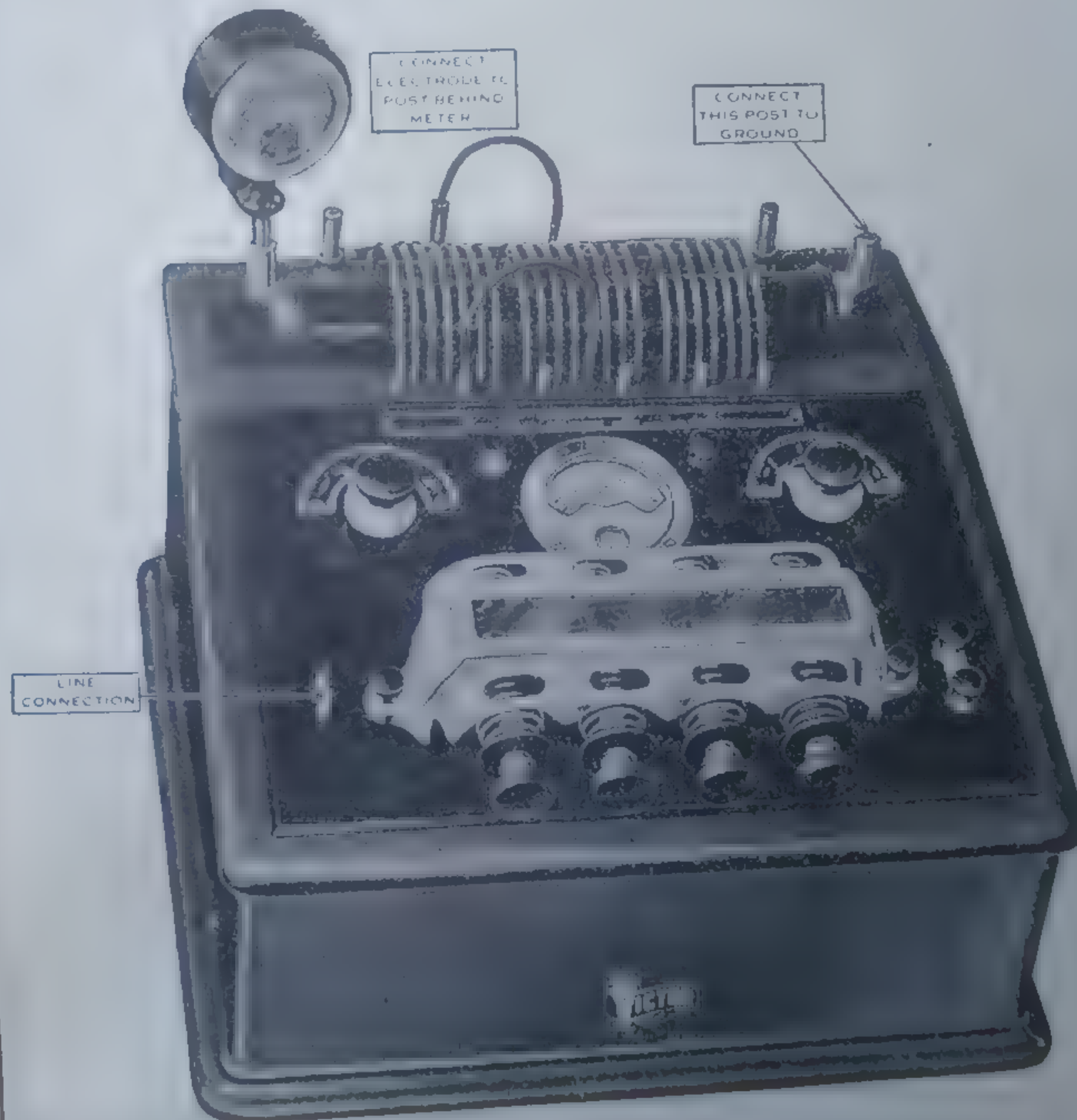
Voltage setting immaterial when using auto-condensation coil.

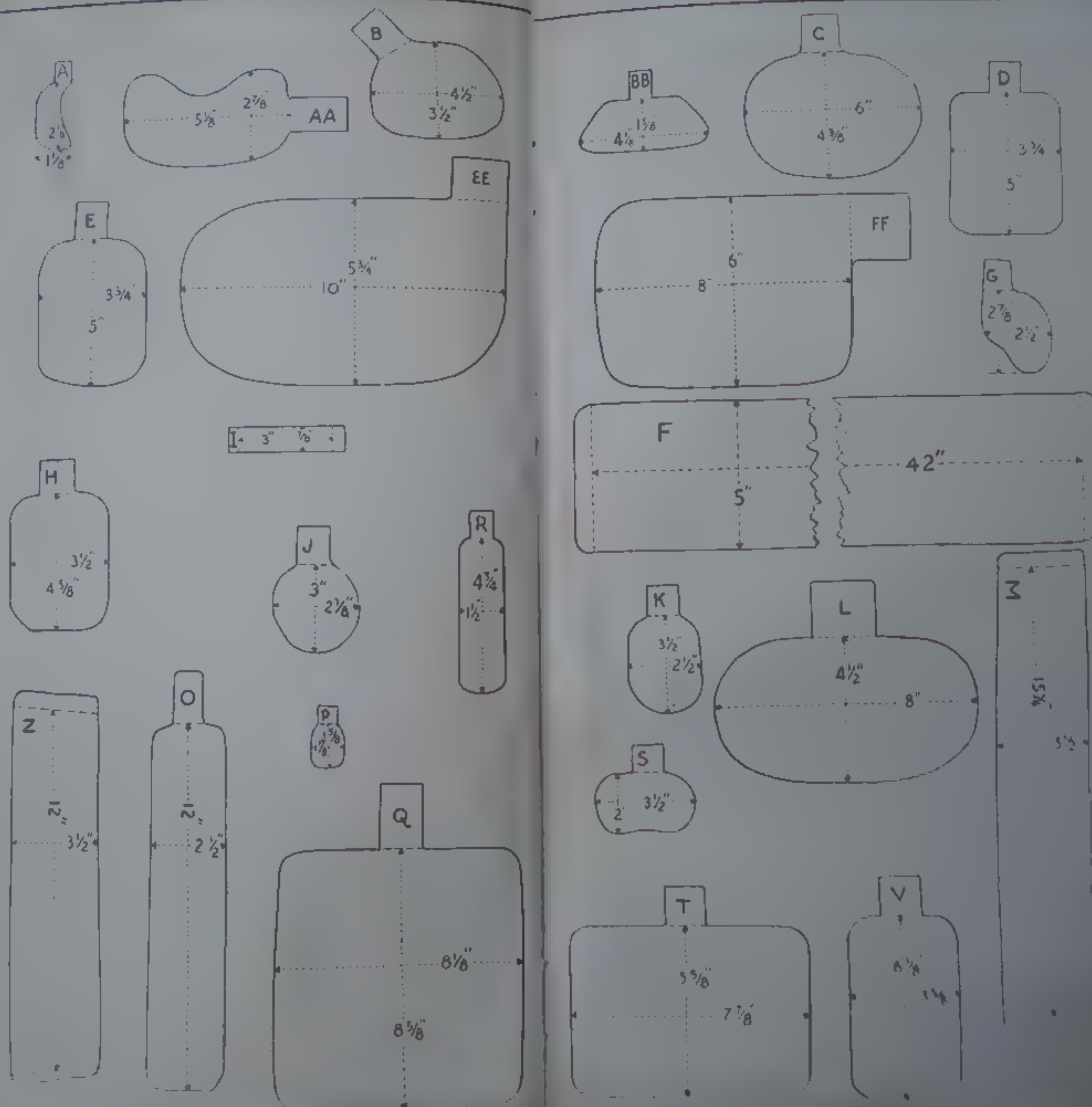
Intensity setting at "4".

DESICCATION AND FULGURATION



VACUUM OR NON-VACUUM ELECTRODE TECHNIC





This composite diagram of all foil electrodes described in this manual is reproduced here in order that an idea of their relative sizes may be obtained. Electrodes are shown approximately one-fifth actual size.

Questions and Answers Pertaining to High Frequency Currents

1. What is a high frequency current?

Answer: An electrical current with a frequency so high that it fails to produce neuromuscular response, but instead its energy is transformed into heat.

2. What is diathermy?

Answer: Diathermy means "to heat through." Diathermy is secured by passing high frequency currents through tissues. The heating effect is due to the resistance of the tissues to the passage of the current, and is proportional to the electrical energy dissipated in the tissues.

3. What frequency should be employed for diathermy?

Answer: The exact role played by frequency is somewhat uncertain. Present day machines range from a frequency of five hundred thousand to over four million per second.

4. What is medical diathermy?

Answer: Diathermy when used to heat tissues within their physiological limits is termed "medical diathermy."

5. What is surgical diathermy?

Answer: Diathermy when used to heat tissues beyond their physiological limits, producing actual tissue destruction either by dehydration or coagulation, is termed "surgical diathermy."

6. What are the advantages of metal electrode foil for diathermy treatments?

Answer: Metal electrode foil is inexpensive, can be reused, is reasonably flexible, makes fair contact, is easy to apply, is quickly cut to any size or shape, and may be applied dry.

7. What is the through and through method?

Answer: The part to be treated is sandwiched between two electrodes. If the heating effect is desired nearer one surface than the other, then the electrode on that surface must be the smaller of the two, thereby obtaining a greater current density.

8. Are other methods than the through and through method employed?

Answer: Yes. (a) The plate and cuff method, e. g., the hand rests on a metal plate and a cuff is placed around the forearm. (b) The double cuff method, e. g., one cuff above the knee, about mid thigh, and another below, about middle of lower leg. (c) Cuff and water method, e. g., an extremity is placed in a salt solution and a cuff applied to the leg or arm above.

9. Are these methods of equal value?

Answer: No. According to available evidence the through and through method is best.

10. Is it possible to have the current pass through a part by using these other methods?

Answer: Yes. But more current is likely to pass along the surface.

11. Are these methods of any use in administering diathermy?

Answer: Yes, but it is advisable to use the through and through method wherever feasible.

12. How is the dosage determined in administering diathermy treatment?

Answer: The dose in most cases may be determined by the patient's tolerance. In certain cases, however, the tolerance of the patient cannot be entirely relied upon, and it must be taken that the current density is not so great as to cause burns. According to reported clinical experience, the current density for foil electrodes should not exceed 50 mA per square inch.

13. How long a time should a diathermy treatment be given?

Answer: The duration of a diathermy treatment is determined on the method used, type of pathology treated, type of patient, and part treated. The minimum amount of time for the so-called plate and plate method is used is usually ten to fifteen minutes. The plate and cuff method is usually given for ten to forty minutes, while the cuff and cuff method is usually given for forty minutes. In some chronic sprains conditions it may be advisable to prolong the treatment to an hour or more.

14. Is it necessary to advance the intensity slowly during a treatment?

Answer: The intensity should always be advanced gradually, thus allowing for skin resistance to be overcome. As a general rule advance in first minute to about one-third of total intensity to be administered, after two minutes advance to one-half of total maximum, and after another two minutes advance to maximum intensity desired.

15. Is it necessary to retard the intensity slowly at termination of a diathermy treatment?

Answer: At the end of a diathermy treatment it is best to turn line switch off without decreasing intensity, but it is not good practice, inasmuch as the patient may receive undue discomfort due to the gas being evolved when line switch is turned on.

16. What is the function of the intensity regulator on high frequency machines?

Answer: The intensity regulator serves to regulate the current from the line circuit to the transformer of the high frequency machine. This regulator usually has two scales.

17. What is a high frequency spark gap condenser machine?

Answer: The spark gap condenser and high frequency transformer, connected properly form an oscillating circuit which generates a high frequency current. This frequency is not the spark frequency but the oscillation frequency, and depends upon the capacity and self-induction of the oscillating circuit.

18. What effect does the spark gap have on the sensation of a patient during a diathermy treatment?

Answer: A high frequency spark gap when opened beyond a certain limit produces a disagreeable sensation to the patient, commonly called "laidie sensation." To produce the maximum heat effect with a minimum of discomfort the spark gap should be as near closed as possible, with the intensity regulation on the step producing the desired intensity.

19. What is meant by oscillation frequency and sparking frequency?

Answer: Sparking frequency means the number of wave trains in a second. Oscillation or natural frequency means the rate of oscillation frequency per second. A wave train is composed of several wave lengths.

20. What are some of the contraindications in diathermy practice?

Answer: Walled in pus, areas of anaesthesia, recent hemorrhage, through the female pelvis 36 hours before and after menstruation, or pelvis during any stage of pregnancy.

21. How does auto-condensation differ from diathermy?

Answer: In auto-condensation the patient acts as one plate or conductor of a condenser and the plate of the auto-condensation couch or pad is the other, while the couch or pad itself is the dielectric. This is practically identical with the well known Leyden jar type of condenser, in which the inner coating of foil is one plate, the glass the dielectric, and the outer coating the other plate. Thus, with the patient serving as a condenser, effects are elicited by the constant charge and discharge of the current, quite different from the usual effects of diathermy.

22. Does the thickness of the auto-condensation couch have much to do with results obtained?

Answer: The thickness of couch depends upon capacity and electrical characteristics of the machine used.

23. What effects are provoked by energized vacuum and non-vacuum glass electrodes?

Answer: Vacuum and non-vacuum energized glass electrodes offer an excellent means of producing various degrees of counter-irritation, and superficial heating effects.

24. What terms are used for surgical diathermy?

Answer: Desiccation or fulguration utilizes a short thin spark which jumps from the electrode tip to the part treated, the reaction being that of dehydration.

In electrocoagulation the so-called active electrode is placed in direct contact with the tissues to be treated and the heat in the tissues is raised beyond the physiological level so that destruction of tissue takes place.

25. What are the advantages of desiccation?

Answer: The advantages of desiccation are: The rapid effective destruction of abnormal growths without loss of blood, prevention of infection after growth, thus eliminating possible infection wounds, are left sterile, sealing of blood and lymph channels, preventing subsequent metastasis in malignant cases, and a final good cosmetic effect.

26. What are some of the conditions amenable to diathermy?

Answer: A few of such conditions are: cystitis, prostatic hypertrophy of the bladder or urethra, urethral strictures, hemorrhoids, (O'Connor, Waring).

27. What is the big advantage of a high frequency machine affording a variable voltage and frequency?

Answer: The object in any diathermy treatment is to produce a maximum heating effect in a certain part of the body with the minimum amount of discomfort to the patient. The heat produced in the tissues is proportional to the square of the intensity of the current, the resistance of the part, the cross-section and the time. And inasmuch as the resistance of this part must be utilized, and accepted as a constant, variations in current and in the heating effect must be secured through the control of the other electrical factors of the circuit. The different parts of the human body have different resistances that seem to require different reactions of the electrical factors in order to produce the above optimum results. For instance, it has been found that the correct settings of the Vario-frequency machine to produce a desired heating effect in a resistance such as that of the chest are not the same as those required to produce the best results in an individual of the same individual.

Hence, a machine that is so designed as to permit the physician to select proper voltage and frequency affords a big advantage over those that do not afford the requisite amount of flexibility to meet the varying conditions.

28. Is it necessary to have a very high voltage in order to send a high milliamperage through a given part of the body?

Answer: A machine with a relatively low no-load voltage may be just as successful in sending a given current through a given load as a machine with a very high no-load voltage.

When a patient is connected to a high frequency machine certain voltage drops take place within the machine and in the circuit external to the patient, thereby cutting down the voltage impressed on the patient. If the current flowing through a patient at a definite frequency is the same for two machines the impressed voltage must be the same regardless of the no-load voltage of the machine used.

29. What are the essential characteristics of a good high-frequency machine?

Answer: The essential characteristics of a good high frequency machine are many. In addition to the quality of materials utilized, and construction, the machine should be considered from a clinical aspect as to safety, quality of current regulation or control, and capacity.

30. Will the two cords from the terminals when connected together give an accurate idea as to machine capacity?

Answer: The only possible accurate means of determining the capacity of a machine is that of placing a patient in the circuit and recording the maximum milliamperage that can be passed.



VICTOR X-RAY CORPORATION

GENERAL ELECTRIC COMPANY
X-RAY APPARATUS, COOLIDGE TUBES AND
PHYSICAL THERAPY APPARATUS

CHICAGO

November 1, 1934

Dear Doctor:

The Victor Radio Frequency Diathermy Unit is the most powerful unit in use and is conceded to be the finest ever produced. Because it offers so many selections of frequency, voltage, and spark gap adjustments we have compiled in ready reference form all available information pertaining to the proper use of this equipment. This will serve to guide the operator in selecting the proper settings to obtain the most effective output from the machine and the most satisfactory treatment from the standpoint of the patient. We send you this information herewith as evidence of our desire to be of service.

As manufacturers we have long recognized that our responsibility to our customers does not terminate with the sale, installation and demonstration of equipment. We would like to call your attention also to the fact that we maintain an extensive reference library and are in position to supply references, abstracts, or reprints covering any condition in the treatment of which diathermy has been reported in current medical literature. This service is available to you without obligation.

If you will indicate on the enclosed post card the particular condition in which you are interested and also in what special condition the application of diathermy interests you we will send you the available literature on the subject. It is of great interest to us to know how your machine is performing and if you will tell us in the space provided the remarks we will appreciate it.

Trusting that the Diathermy technique manual will prove of value and assuring you of our desire to be of further service, we are

Very truly yours,

VICTOR X-RAY CORPORATION

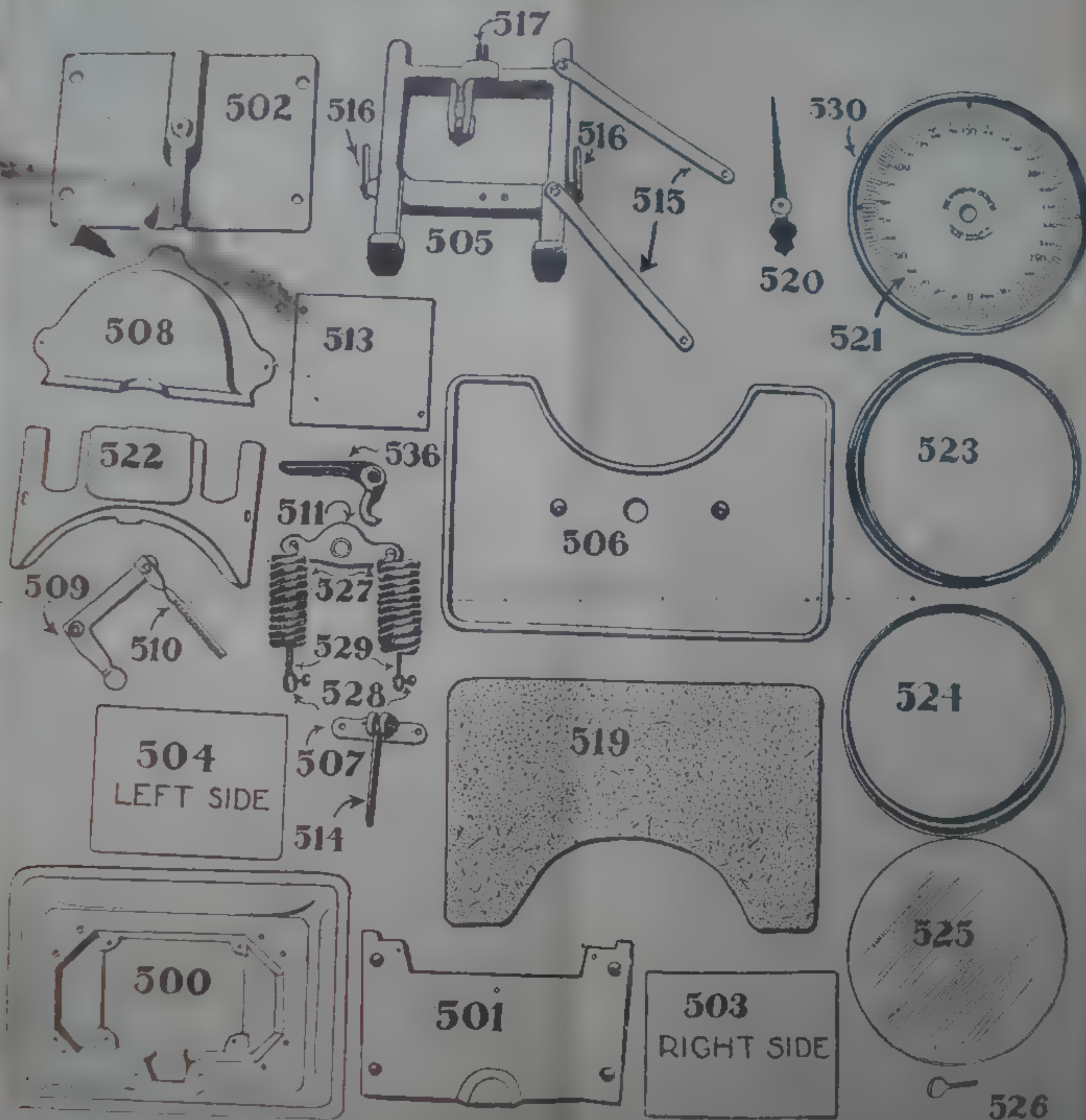
M. J. ...
Publications Division.

A GENERAL ELECTRIC



ORGANIZATION

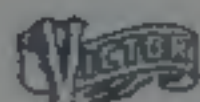
DETECTO PARTS



Please order parts by number.
See other side for prices.

PRICE LIST DETECTO PARTS

<u>Part No.</u>	<u>Name of Part</u>	<u>Price</u>	
500	Base	\$4.00	each
501	Front Wall	2.50	"
502	Back Wall	3.50	"
503	Right Side Wall	3.00	"
504	Left Side Wall	3.00	"
505	Load Receiver	5.00	"
506	Platform	3.00	"
507	Toggle Bar Holder	1.00	"
508	Case	3.50	"
509	Lever	1.00	"
510	Rack	.50	"
511	Spring Holder	.50	"
513	Bottom Cover	.30	"
514	Toggle Bar	.40	"
515	Long Toggle Bars	.50	"
516	Short Toggle Bar	.40	"
517	Special Screw	.30	"
519	Cork Carpet Mat	.85	"
520	Pointer	.50	"
521	Dial (See part No. 530)	.50	"
522	Cover	2.00	"
523 }	Set of Sashes	2.50 per set	
524 }			
525	Glass	.50	each
526	Adjusting Screw	.25	"
527	Spring	.80	"
528	Nut bearing with set screw	.25	"
529	Bolts for above	.20	"
530	Dial Back (See part 521)	.60	"
536	Rocker	.50	"



VICTOR X-RAY CORPORATION

MAIN OFFICE AND FACTORY
CHICAGO
2012 JACKSON BOULEVARD
"STATION D"

MANUFACTURERS OF
X-RAY APPARATUS, COOLIDGE TUBES AND
PHYSICAL THERAPY APPARATUS

RESEARCH LABORATORIES
SCHENECTADY
N.Y.

CHICAGO

October 18, 1928.

Dear Doctor Earle:

Seven papers on Physical Therapy were read at the last meeting of the A.M.A. in Minneapolis and all of them were well attended. Surely this is indicative of the modern trend of the profession to give proper recognition to this important but hitherto undervalued therapeutic agency.

Take just one of the energies utilized in physical therapy - Surgical Diathermy. You will find enthusiastic reports of its varied uses in most of the accredited medical journals.

You manifested your interest in the subject of Physical Therapy some weeks ago when you gave us the opportunity to send you in abstract form, some reprints from recent medical literature regarding its applications in Surgery.

It is our pleasure to enclose a reprint of a paper by one of your colleagues who has employed Surgical Diathermy extensively in bladder work. It will take only a few minutes to read and we hope you have the time to read it right now.

"comparable to the dramatic effect of blood transfusion in suitable cases is the effect of diathermy. Why does diathermy play an important role, since it contributes only heat? Only heat! It must be remembered that animals are energy-transformers. One of the greatest, perhaps the greatest control of energy transformation is heat, for it is known that with each increase of 1 degree C. in temperature, the speed of chemical activity is changed 10 per cent. What stimulant, what drug has a metabolic effect in the least comparable to this? Even laying aside the obvious facts of physics, the manner in which the patient responds to the application of heat is most striking. In diathermy we have an ideal method for introducing heat into the body. As an emergency measure in the case of a patient whose energies are flagging, diathermy almost equals blood transfusion as a measure for temporary relief. Later we shall discuss diathermy as an important sustaining measure during certain abdominal operations."

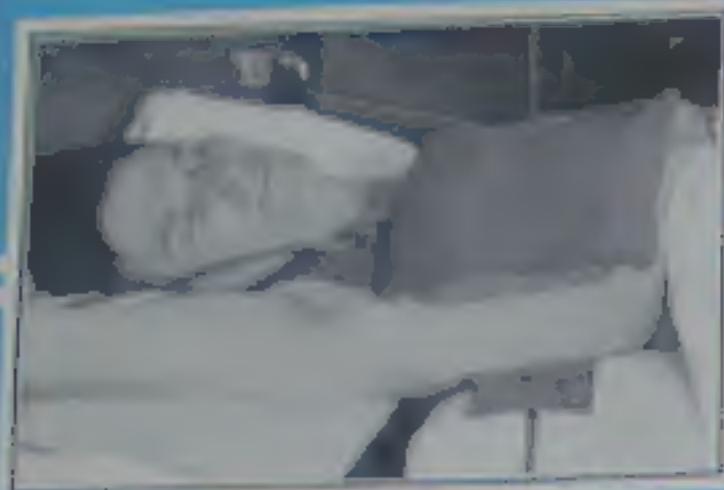
G. W. Gile, M. D., and C. C. Higgins, M. D.,
Cleveland, "Prevention and Treatment of Post-operative Complications in Abdominal Surgery," *Journal Am. Med. Ass.*, November 19, 1927, Page 1728.

Through our extensive reference library we are in position to supply abstracts and reprints covering other conditions found in your practice which have been successfully treated with physical therapy apparatus. These may be had for the asking.

Very truly yours,

VICTOR X-RAY CORPORATION

M. J. Price
Publications Division.



Diathermy to chest—double plate method



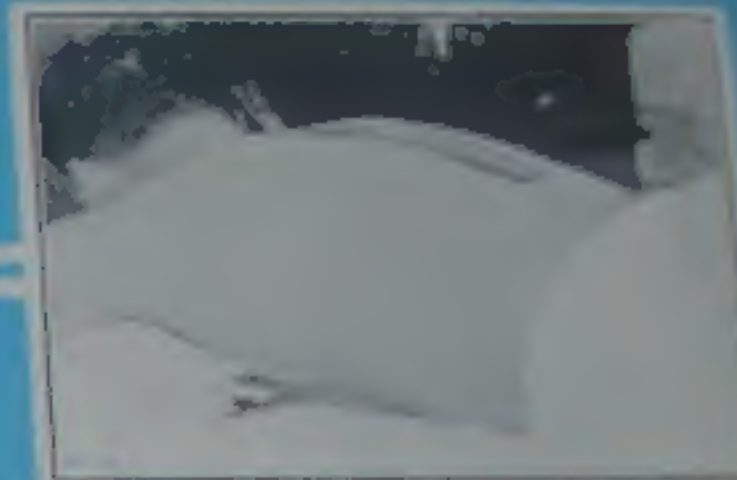
Diathermy to throat—double plate method



Diathermy to knee—double plate method



Diathermy to shoulder—double plate method



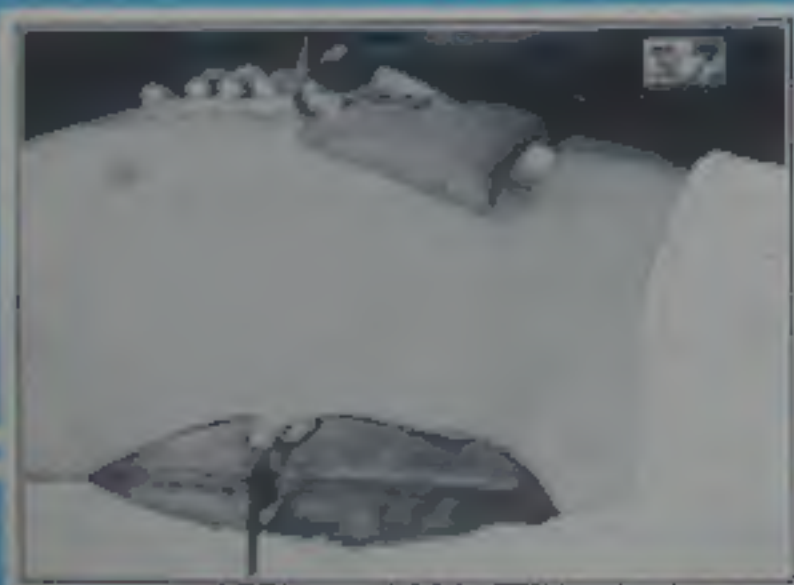
Diathermy to upper arm—double plate method



Diathermy to foot—double plate method



Diathermy to hand—double plate method



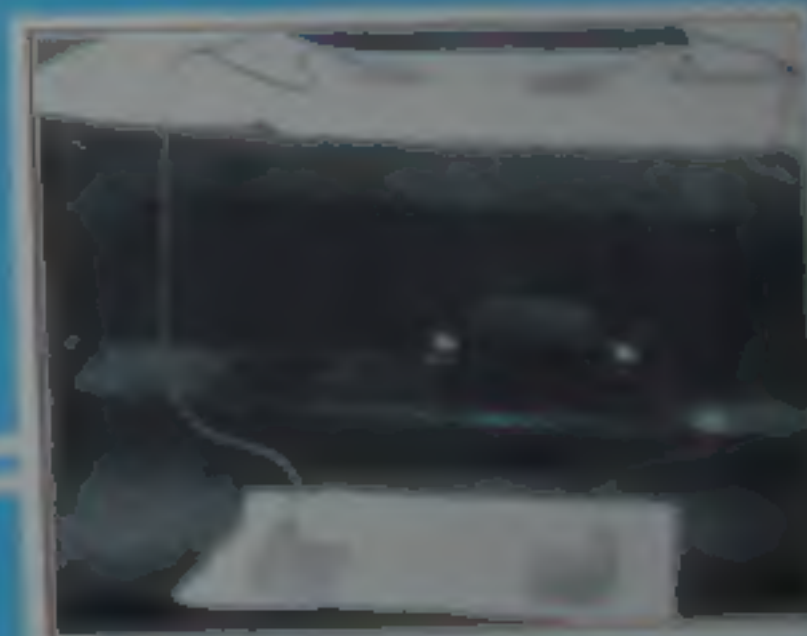
Diathermy to lower back—double plate method



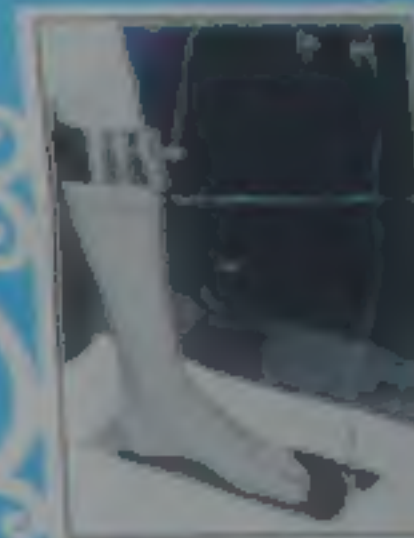
Diathermy to hip—double plate method



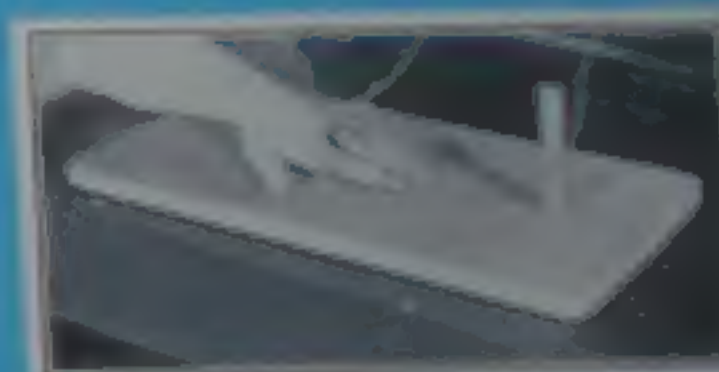
Diathermy to elbow—double plate method



Diathermy to lower leg—double plate method



Diathermy to foot—double plate method



Diathermy to hand—double plate method

A Means of Generating Heat Within the Tissues

is the simplest definition of medical diathermy. In other words, it is the application of the particular form of high-frequency current that produces this effect. It does not come under the category of the hot water bottle, electric heating pads and other similar devices which are basically surface applicators.

Consider then a deep seated condition indicating the use of heat. With an apparatus of correct design you can readily introduce the desired heat within, from the point of perception up to the tolerance of the patient.

A modern, correctly designed diathermy machine will prove its value to you as it has to thousands of physicians in practically every branch of medicine.



VICTOR VARIO-FREQUENCY DIATHERMY APPARATUS
A composite of every approved principle thus far applied in the design of diathermy apparatus.

The Ideal High-Frequency Diathermy Apparatus

is that one with which the electrical constants may be selected to give the maximum current within the tolerance of the individual patient. Thus the variable resistance of the part under treatment and the individual tolerance of the patient involve no compromising technique. To secure that combination of voltage and frequency which gives the exact desired current or heat to a part, it is essential that both the voltage and frequency be selective.

The Victor Vario-Frequency Diathermy Apparatus is designed on this principle. Its voltage and frequency ranges eliminate the necessity of adhering to a quality of current which heretofore has been arbitrary because of electrical limitations in the machine producing it.

Diathermy to frontal sinuses—double plate method

Diathermy to knee—
double plate method

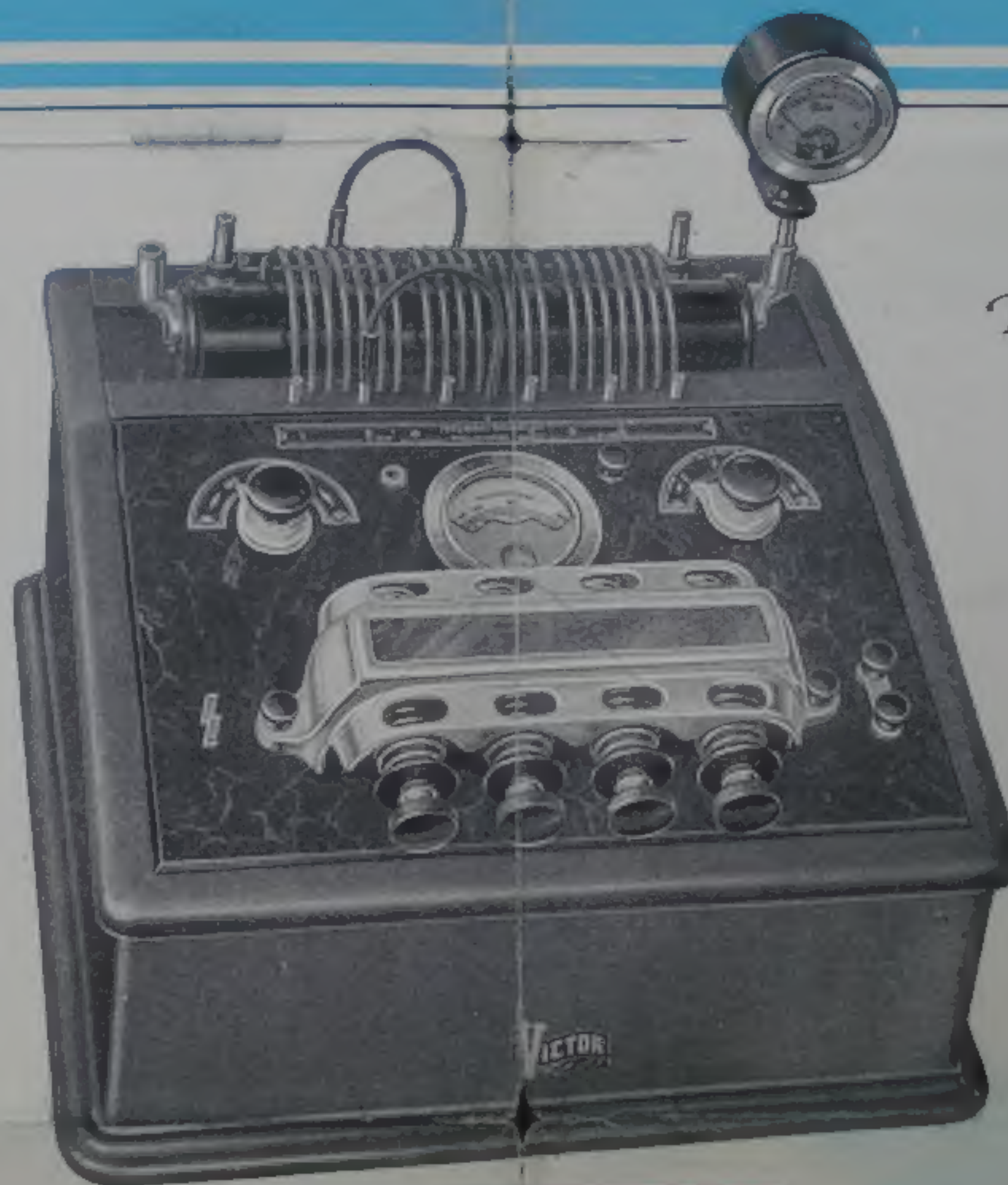
Diathermy to shoulder—double plate method

A Means of Generating Heat Within the Tissues

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*A Reference Book of Practical Suggestions
for Users of the
Victor Vario-Frequency Diathermy Apparatus*